

**An Environmental History of the Kawuneeche Valley
and the Headwaters of the Colorado River, Rocky Mountain National Park**

**Thomas G. Andrews
Associate Professor of History
University of Colorado at Boulder
October 3, 2011
Task Agreement: ROMO-09017
RM-CESU Cooperative Agreement Number: H12000040001**

Table of Contents

Acknowledgements	i
Abbreviations Used in the Notes	iv
Introduction	1
Chapter One: Native Peoples and the Kawuneeche Environment	20
Chapter Two: Mining and the Kawuneeche Environment	91
Chapter Three: Settling and Conserving the Kawuneeche, 1880s-1930s	150
Chapter Four: Consolidating the Kawuneeche	252
Chapter Five: Beaver, Elk, Moose, and Willow	367
Conclusion	435
Bibliography	441
Appendix 1: On “Numic Spread”	477
Appendix 2: Homesteading Data	483
Transcript of Interview with David Cooper	486
Transcript of Interview with Chris Kennedy	505
Transcript of Interview with Jason Sibold	519

Acknowledgements

This report has benefited from the help of many, many people and institutions. My first word of thanks goes to my two research assistants, Daniel Knowles and Brandon Luedtke. Both Dan and Brandon proved indefatigable, poring through archival materials, clippings files, government reports, and other sources. I very much appreciate their resourcefulness, skill, and generosity. I literally could not have completed this report without their hard work.

Mark Fiege of Colorado State University roped me into taking on this project, and he has remained a fount of energy, information, and enthusiasm throughout. Maren Bzdek of the Center for Public Lands History handled various administrative details efficiently and with good humor. At the National Park Service, Cheri Yost got me started and never failed to respond to my requests for help. Paul McLaughlin, who supervised the latter stages of the project, provided a wealth of valuable feedback, not just from himself, but from numerous other NPS employees. Paul has also proven generous in extending me extra time in which to complete the project, and I have appreciated his thoughtful counsel. Judy Visty and Ben Bobowski championed this project from its very inception, and I am very grateful for all of the help they have provided. Michele Simmons helpfully copied the materials located in binders at the Fleshuts Hut and insured that they reached me. Ernie Bernhard joined Paul McLaughlin, Michele Simmons, Judy Visty, and others in commenting on drafts of this report and suggesting improvements. This report is certainly the better for their attentive reviews, though all errors remain mine alone. Last but hardly least, this project would have difficult if not impossible but for the expertise of Tim Burchett at the Rocky Mountain National Park Archives. I also want to thank the staff of RMNP

for graciously hosting me on a number of visits to the Park, ranging from daytrips through the Kawuneeche Valley to a couple of writing retreats at McGraw Ranch. Though I sometimes take a critical approach toward the NPS in the pages that follow, I also have immense respect and gratitude for the difficult, essential, and, too often, thankless work that Park employees devote in hopes of advancing the public good and the ecological health of Rocky Mountain and surrounding areas.

The National Park Service provided most of the funding for this report, but I have also benefited from the generosity of the Department of History and the College of Liberal Arts and Sciences at the University of Colorado at Denver. I thank JoAnn Porter of CLAS for helping me out with the subcontract and other financial arrangements. Myra Rich and Marjorie Levine-Clark, successive chairs at the department, helped me to fund Dan Knowles's research assistantship. Elizabeth Huerkamp stepped in and performed valuable work on the bibliography. Professional development funds generously advanced by Dean Dan Howard helped to fund summer salary, thus helping me make ends meet while working on this project. And Tabitha Fitzpatrick handled various financial details with her characteristic nonchalance and adeptness.

Flannery Burke of the history department at St. Louis University provided pointed critiques that greatly improved my first chapter; Katherine Benton-Cohen provided an encouraging critical reading of chapter two. They have tried to keep me honest and save my readers from irritation, confusion, and contradiction. Paul Sutter has allowed me to bend his ear on many occasions regarding the histories that appear in these pages; I appreciate his thoughtful questions and support.

David Cooper, Chris Kennedy, and Jason Sibold kindly shared their time and knowledge with me on several occasions; not least, each agreed to be interviewed. The resulting transcripts

are part of this report, and will be placed in the RMNP Archives in Estes Park, together with recordings of our conversations. A number of other scientists also proved helpful at various points in sharing their work.

The staffs of the Denver Public Library, the National Archives and Records Administration branch in Denver, the Grand County Clerk and Recorder's Office, the Grand County Judicial Center, and a number of other libraries and archives played critical roles in helping me and my researchers to find the various historical sources that serve as the basis for this report. My father, John T. Andrews, and my mother, Martha Andrews, discussed this project with me on several occasions, always offering suggestions based on their wide knowledge of various fields related to past human-environment interactions in the Colorado high country.

Finally, I want to thank my wife, Amy McMaster, and our children, Santiago and Fiona. Completing a project of this length and difficulty on such a short schedule sometimes took me out of their lives when they needed me most. I appreciate their generosity in that regard. But I am even more grateful to them for the love and diversion they have provided.

Abbreviations Used in Notes

DPL	Denver Public Library
GLO Records	General Land Office Records Homestead case files from Kawuneeche Valley. Originals in NARA, Washington, D.C. Copies placed in RMNP Archives as a result of this project
NARA	National Archives and Records Administration
RMNP Archives	Rocky Mountain National Park Archives, Estes Park, Colo.
RMNP Library	Rocky Mountain National Park Library, Estes Park, Colo.
RMR	Ranger's Monthly Report From west-side ranger district or districts (administrative changes over the years mean that these lack consistency), referred to by month report concerns; reports located in RMNP Archives
SMR	Superintendent's Monthly Report, RMNP Reports located in RMNP Archives

Introduction

This is a rather large study of a rather large place. Its subject is a stretch of country that few outside of the Rocky Mountains of north-central Colorado have ever heard of: The Kawuneeche Valley, a high mountain valley that runs from north to south along the headwaters of the Colorado River between the Front Range and the Never Summer Mountains. Though this study is geographically focused, the pages that follow nonetheless examine an expansive topic: the relationships human beings of various sorts have cultivated with different parts of the valley environment since people first inhabited this region more than twelve thousand years ago down to the present day.

The questions that guide this journey through the Kawuneeche Valley's environmental history are easy to frame but difficult to answer: How has this landscape and its ecosystems changed over time, and what continuities have endured in the face of change? What factors best explain these changes? What ideas, worldviews, perceptions, and value systems shaped how different groups of people made sense of this place? How did the "nature" people imagined in their heads align with the material world that confronted them in the Kawuneeche, and what struggles ensued as various people struggled to make their visions manifest here? What unintended consequences did people unleash in consequence, and what did they learn as a result? The great virtue of such questions is that they draw our attention to the far-reaching and often intense interrelationships that have prevailed along the Colorado River headwaters across the ages.

One way to picture the Kawuneeche Valley is to imagine how it looks to airline pilots, cartographers, and an occasional high-flying bird. The axis of the valley runs almost directly north to south. The head of the Kawuneeche comprises a broad shoulder known as La Poudre Pass occupying a comparatively low saddle (in the Colorado Rockies, “low” is a decidedly relative term—La Poudre Pass is well over 10,000 feet above sea level) connecting the Never Summer Range with Specimen Mountain and the Front Range. From our vantage high in the sky, the top of the valley curves around like the tip of a finger pushing upwards from Grand Lake, Colorado’s largest natural lake, to poke the Continental Divide into form rarely witnessed in the Southern Rockies: All the lands the land beyond the crest of the mountains that define the edge of the Kawuneeche’s finger drain into the Platte River, and hence into the Gulf of Mexico via the Mississippi River; the Kawuneeche itself, meanwhile, drains into the Colorado River, and thus into the Gulf of California. This is one of the few places in Colorado, in other words, where the so-called “Western Slope” that ultimately flows into the Pacific Ocean (at least in theory—the Colorado River now dissipates before reaching saltwater). It is a strange phenomenon, this U-shaped digression of the Continental Divide, and one that alerts us to a crucial insight about the Kawuneeche Valley: This is a place where twists and turns adopt unusual forms, a topsy-turvy expanse where the reversal of the “Western” and “Eastern” slopes is hardly all that is backwards or mixed-up.

Because the Front Range trends in a southwesterly direction from La Poudre Pass to the Kawuneeche Valley’s southern edge, defined here as beginning along a line running east-to-west along the northern boundary between the Town of Grand Lake and RMNP, our study area looks a bit like a right triangle: the Never Summers maintain a jagged but essentially north-and-south vertical axis on the west, a line between the Never Summers and Ptarmigan Lake comprises the

horizontal base along the south, and the lazy foothills on the western side of the Front Range chart a rough diagonal from the triangle's southeastern apex to its northern tip. The heart of the Kawuneeche is the Colorado River itself, of course, which hugs the foot of the Never Summers and maintains a more-or-less southerly course if one overlooks its many meanders and oxbows. In very rough terms, the triangular valley thus delimited measures fifteen miles from north to south and ten miles from west to east along its base, but it might be more accurate to impose a semicircular curve at the northwestern point of the polygon to represent the amphitheatre-like shape of the bowl formed by the ridge curving between the Never Summers and Front Range across the Poudre Pass.

The lofty and relentless Never Summers broken only by La Poudre Pass and Thunder Pass at the range's northern edge, and Baker and Bowen Passes farther south, form a barrier along the Kawuneeche's western edge. Knife-edge ridges soaring above high alpine lakes and extensive fields of rocky talus link a succession of peaks, from Richtofen Peak on the northeastern tip of the Kawuneeche rising to 12,940 feet, and nine other named peaks lying above 12,397 feet. Crossing the Never Summers has never been easy, for man or beast; as a result, the forces of change have almost always ventured into the Kawuneeche from the east and north, and especially from the south—the only side of the valley lined with a natural door—the Colorado River and Grand Lake—instead of untain walls.

The segment of the Front Range that defines the diagonal edge of the valley triangle rises to similar heights, but often more gradually and with more interceding routes. Mount Julian rises to 12,928 feet near the midpoint of this boundary, and a group of even higher peaks—McHenrys, Powell, and Taylor, tower east of the valley's southeastern edge to heights of 13,153, 13,208, and 13,327 feet above sea level, respectively.

Below its mountainous edges, the Kawuneeche drops quite rapidly on the Never Summer side, but more slowly and with more twists and turns on the Front Range edge. Most of the valley floor lay between roughly 8,400 feet above sea level at the Kawuneeche's southern edge, and over 9,000 feet above sea level at the head of the valley. The valley floor is easily the flattest stretch of land in sight from our perch above the valley. In several stretches, the meandering course of the river has reinforced an earlier consequence of the Kawuneeche's glacial history by carving a broad U-shaped surface that sometimes spans well over a mile from west to east. Dozens of tributaries pour into the river, carrying rain and snowmelt from the high country above on the first stage of an epic journey through the mountains, plateaus, canyons, and deserts of the American West.

Another useful way to see the Kawuneeche is as an ecosystem—or, still more accurately, as a place where multiple ecosystems range over time and space. Most ecologists who study the Rocky Mountains use vegetative communities to organize their understanding of the rather chaotic relationships between different organisms, landforms, natural cycles, and so forth that unfold themselves across the landforms we have just encountered. Using vegetative communities to provide rough categories for understanding messier ecological arrangements makes good sense, since plant photosynthesis provides the primary source of the energy on which virtually all other organisms depend.

Several factors help to explain how various plants array themselves across the valley's landscapes. Because altitude exerts a dominant influence on temperature and moisture regimes, it usually serves as the primary control on where various plant species can survive and thrive. Soil type, exposure to sun and wind, position relative to the water table, depth and duration of winter snow cover, the impact of disturbances ranging from avalanches to floods to trail

construction, histories of dissemination at the hands of human beings (or, for that matter, on and inside the bodies of animals), and many other factor also have always influenced what has grown where in the Kawuneeche. The result is a vegetational mosaic of considerable variability and diversity.

This mosaic is best understood by starting at the valley floor, then ascending the Kawuneeche's slopes through successive bands of vegetative communities to the craggy mountain heights, realms of ice and snow devoid of all but the hardiest lifeforms. If we were to head straight up—a near-impossibility given the steepness of the terrain and the density of shrub and tree cover in stretches of the valley—we might climb more than 5,000 vertical feet in just four to ten miles. In the course of this grueling slog, we would pass through a sequence of plant communities that, at lower elevations, span dozens of degrees of latitude and several thousand miles—an ecological journey that takes us from plant types common in the American Southwest to those that adorn North America's Arctic fringe.

The Colorado River defines the bottom of the Kawuneeche. It coalesces at the head of the valley, a rushing, rock-lined mountain stream indistinguishable in this incipient form from the top reaches of most of its Rocky-Mountain tributaries. Soon after this gathering of waters, though, the river breaks out onto a plain, carved by Pleistocene glaciers and the streams own incessant weavings and windings. The Upper Colorado is noticeably unhurried for a river of such elevation, its waters sometimes rounding into the sort of lazy, swooping curves typically found on the plains or along the coast.

This crucial fact explains the Colorado River's richness as a habitat. Rushing creeks like those that hurl down the sides of the Kawuneeche comprise erratic, high-energy environments in which small plants and animals—chiefly algae and invertebrates—concentrate in pools and

riffles; the river on the valley floor, by contrast, offers a wider and deeper channel, slower water, and greater volume. A wider array of species have evolved to thrive under these conditions. On its headwater stretches, most of the invertebrates in the Colorado depend on organic plant material carried into the stream. On the Kawuneeche floor, though, the river sustains a more complex and productive invertebrate fauna. These small creatures provide a food supply for larger creatures, including predators such as the Colorado River cutthroat trout (*Salmo clarki pleuriticus*), the river's native apex predator, as well as introduced rainbow trout and brook trout.¹

As streams slow, they can hold and transport less sediment; thus the Colorado unloads some of the material carried into it by its tributaries along the Kawuneeche Valley floor. Deposition accelerates dramatically when high snowmelt in late spring or early summer lifts the river above its banks—a process that beavers historically helped along by damming streams. These fresh sediments carried down from the valley's flanks is rich in minerals and organic matter; its bounty makes the riparian zone astride the river one of the most productive parts of the Kawuneeche.

But the valley floor is also a place of obvious variety. Those portions of the bottomlands that remain wet for all or nearly all of the year make good homes for water-loving species like willow, sedges, and rushes; these, in turn, have long made the riparian zone a favored habitat for beaver and ungulates. On lands above the water table sprawl grasses and forbs that need more drainage create rich meadows, some of them comprised of native plants, others now dominated by timothy and other exotic species cultivated by the settlers who worked parts of the

¹ Audrey DeLella Benedict, *The Sierra Naturalist's Guide: Southern Rockies* (San Francisco: Sierra club Books, 1991), 378-81; Patrick C. Trotter, *Cutthroat: Native Trout of the West* (Boulder: Colorado Associated University Press, 1987), 151-162.

Kawuneeche between the 1880s and the 1970s. Islands of dense lodgepole pine sometimes rise above terraces and other patches of high ground on the valley floor like so many islands.

The subalpine zone that rises above the floodplain of the Colorado along the slopes of the Never Summer and Front Range foothills presents a much more uniform appearance than these bottomlands where willow, grass, and lodgepole form an intricate mosaic. In the Kawuneeche, lodgepole pines dominate subalpine forests, often growing in thick stands that seem to allow few other plants any sunlight whatsoever. As Audrey DeLella Benedict notes in *The Sierra Club Naturalist's Guide: Southern Rockies*, “young lodgepole forests colonized as a result of fire”—which consumed most of the Kawuneeche’s forests between the 1860s and 1880s—“or other disturbance are typically even-aged and single-stored, their density and homogeneity giving them the appearance of a tree farm.”² Despite the time-honored Anglo-American tendency to associate ample tree cover with fertility, lodgepole forests actually comprise some of the least hospitable and least productive wildlife habitats anywhere in the valley. As Benedict explains, “Lodgepole pine forests offer a limited larder to all but a few species of mammals and birds. The dense growth of trees and the shady character of most successional stands result in a depauperate understory, providing little cover or food.”³

Above the lodgepole belt stretch a variety of other vegetation communities. Aspen is present but uncommon. Limber pines—shorter trees that clutch to rocky ridges, their tangled forms seeming to flout the upright, narrow compartment so characteristic of their lodgepole cousins—cling in small patches on rocky ridges on the northeast edge of the Kawuneeche. Elsewhere above 9,500 feet, Engelmann spruce and subalpine fir tend to dominate. The former reach particularly impressive dimensions just below timberline in sheltered basins, only to turn

² Audrey DeLella Benedict, *The Sierra Naturalist's Guide: Southern Rockies* (San Francisco: Sierra Club Books, 1991), 427.

³ Benedict, *Sierra Club Naturalist's Guide: Southern Rockies*, 435.

into dwarfs along the subalpine-alpine ecotone. Just a few hundred feet uphill from sites where Engelmann spruce reach more than 120 feet in height, members of the same species adopt the diminutive form known as *krummholz* and huddle against one of the most extreme climates found anywhere in the lower 48 states.

Above tree line, which varies between roughly 11,000 and 11,400 feet above sea level, even the dwarfed types of spruce and fir give way to a remarkable variety of plants that have evolved to take advantage of the ample solar energy available in these frosty and windswept expanses.⁴ Despite deep snows, fierce summer storms, and harsh winds throughout the year, the subalpine and alpine zones of the Kawuneeche are among the valley's most productive ecosystems. On the tundra, abrupt variations in microclimatic conditions and soils from spot to spot create a rich patchwork of plants that have evolved to weather life above treeline. Favored with high precipitation and ample sun, these vegetative communities offer animals more nutriment than the lodgepole forests below—though only in summer can most creatures obtain more calories from the alpine zone than they burn in the course of staying warm in these icy fastnesses. During the warm season, the alpine zone and especially the alpine-subalpine ecotone offer some of the best grazing and browsing around, supporting elk, bighorn sheep, mule deer, and other animals. Most larger creatures, though, cannot survive the winter on the Kawuneeche's slopes and pinnacles. Instead, they abandon the high country to picas, marmots, ptarmigan, and other creatures of dauntless fortitude, and leave the valley, either ambling down to lower-elevation portions of the Colorado River watershed, or climbing over the mountain passes that lead to North Park or the Estes Valley. For most of human history, people had to do the same; by January, deep snows cover most every part of the Kawuneeche, and food all but disappears from the landscape.

⁴ Ibid., ch. 22; figures from 462, 464.

An ecological perspective on the Kawuneeche requires us not just to follow animals as they move across the valley's vegetation zones, but also energy and nutrients as they move through the valley's food chains, from plants to herbivores, from herbivores to carnivores and scavengers, and then back once again to plants. Even a superficial look at these food chains reveals a key insight: though the Kawuneeche's plant communities might seem like discrete and disconnected entities--separate lifezones clinging to distinct altitudinal bands, each actually comprises but a part of a larger whole. Water descends, carrying sediment, plant matter, invertebrates, and oxygen; animals migrate up, down, and all around, eating here, defecating there, transporting burrs, parasites, and other organisms from place to place; winds blow, dispersing seeds and spreading wildfire.

Each of these connections plays a small but vital ecological role. From such complexity flows not only a kind of unity, but also prodigious dynamism. The Kawuneeche's weather—short-term changes in temperature, precipitation, wind, and so forth—as well as its climate—longer-term variations in these same factors—make this a land of constant change. From moment to moment, morning to night, day to day, season to season, year to year, and era to era, both the weather and the climate have varied erratically. Winds often reach speeds in excess of 100 miles an hour in the alpine zone, but calm days are not unheard of; temperatures in the Kawuneeche can range from the high 80s Fahrenheit to dozens of degrees below zero F; hundreds of inches of snow fall on the high country over the course of most winters, yet periodically, oscillations in distant ocean systems cause the flow of moisture into the Kawuneeche to fail and drought to grip the valley. Indeed, the Kawuneeche owes its very existence, not to mention its well-defined U-shape, to the Rockies' history of heavy glaciation

during the last ice age, when a thick tongue of ice bore down on the Kawuneeche from the heights above, gouging out the valley floor before succumbing to a warming climate.

Change across time, change across space—these are endemic features of the Kawuneeche landscape. And yet in recent years, there have been more than a few signs that unprecedented changes may be afoot in the valley. Here, as in so many other parts of the Rocky Mountains, mountain pine beetles have killed large stretches of pine, with lodgepoles afflicted especially seriously. Driving along the main road through the valley, one cannot help but notice the ugliness that has resulted from the deaths of millions of these evergreens. In the first years after they succumb to the beetle and the blue-stain fungus beetles introduce, the trees turn a rusty red. The first stands killed by the outbreak, though, have now turned a morbid purple-gray.

The NPS has decided for both economic and ecological reasons to let most of the dead trees be. Along Trail Ridge Road, many hiking trails, and at some Park facilities, though, the NPS has had to take action to protect visitors from the dangers which dead trees present. In long stretches along the road, as well as at Timber Creek Campground and other sites, almost all the pines are dead; this dangerous situation has led the Park Service to carve out small-scale clear-cuts. The Park Service has never been in the timber business and, moreover, sawmills throughout the region already have way more beetle-kill pine on their hands than they can market. So Rocky employees have to pile up the debris from felled trees in large piles nicknamed tipis; when fire and weather conditions are suitable, they set the tipis ablaze, killing the beetles and returning to the soil some of the nutrients the trees had taken up in the course of their growth.

The mountain pine beetle outbreak is probably the most obvious sign of rapid environmental changes underway in the Kawuneeche. Unfortunately, though, dead pine trees are hardly the only problem the Kawuneeche faces. Elk and moose, with their large bodies and proportionally prodigious metabolisms, have become so numerous in the valley that they are causing harm to vital plant communities on which many other organisms depend. The willow thickets on the floor of the Kawuneeche are dying off because of a combination of factors, particularly increased browsing by large ungulates, drought, and the proliferation of a native fungus spread by a bird called the sapsucker. Beavers, creatures that rely largely on willow for food in this stretch of the Rockies, have almost entirely abandoned a valley inhabited by some 600 of the creatures just seventy years earlier.⁵

Because beavers literally created the riparian landscapes of the Kawuneeche over the millennia, building dams that impounded sediments and provided rich soils on which willows and sedges could thrive, the rodents' decline is ramifying into a greater diminishment. Willows, for instance, have great difficulty regenerating in the absence of the conditions healthy beaver populations tend to engender, especially fresh mineral soils and higher water tables. Thus willow die-off, the primary factor that has caused beaver to colonize other valleys instead of the Kawuneeche, may already have set in motion a positive feedback loop that threatens to hamper the ability of willows to regenerate. What such a chain of events would mean for the elk, the moose, or the other creatures that obtain food and shelter from willow is uncertain. If the willows fail to provide, the ungulates will either have to seek out alternative food sources—no easy task in ecosystems as tightly packed as those in the Kawuneeche—or suffer the consequences of a habitat decline: starvation, declining birth rates, disease, and so forth.

⁵ Fred M. Packard, "A Survey of the Beaver Population of Rocky Mountain National Park, Colorado." *Journal of Mammalogy* 28 (August 1947), 219-227.

Moving from the edge of the Colorado River to its riffles and pools, here, too, there is cause for concern. The Grand Ditch, a water diversion canal cut into the sides of the Never Summer range between the 1890s and 1930s to supply irrigation water to farmers along Colorado's northern piedmont, continues to siphon off a goodly percentage of the precipitation that falls on the Upper Colorado watershed. A breach in the banks of the ditch almost a decade ago caused a debris flow that choked a stretch of the river with gravel, mud, and rocks. The mountain pine beetle outbreak and willow die-off are likely causing further trouble for the river itself, altering streamflow regimes, intensifying erosion, and compelling invertebrates and the higher organisms that feed on them to adjust to rapidly changing conditions. As for fish, the native Colorado River cutthroat trout continues to make a valiant comeback, thanks to the work of ecologists and fisheries scientists from a host of state and federal agencies. But brook trout, Yellowstone cutthroat trout introduced under Park Service auspices, and rainbow trout continue to outcompete the Kawuneeche's native fish in many waters.

Hanging over and permeating these and other environmental problems in the valley is the granddaddy of all contemporary environmental concerns from the equator to the poles: global climate change. The mountain pine beetles responsible for devastating the Kawuneeche's lodgepoles, after all, are endemic to the Colorado's lodgepole pine forests; most scientists attribute the explosion in the tiny insect's proliferation over the past decade to causes that are ultimately climatic in character, particularly drought (which weakens trees and reduces their ability to protect themselves against the bugs) and a string of winters lacking long cold snaps (which kill the beetles). While the precise factors responsible for this dearth of prolonged cold weather in winter are unknown—and possibly unknowable—most climatic models predict that elevated concentrations of greenhouse gases in the earth's atmosphere will result (and are

probably already resulting) in warmer temperatures for the Colorado Rockies, especially in winter.⁶

Given the environmental troubles currently afflicting the Kawuneeche, it might be tempting to believe that the valley's environmental history is best understood as a tale of decline. These problems, after all, seem new, and their causes seem clear: People are to blame, with modern, capitalistic, consumeristic people of the American persuasion especially guilty.

This is, in fact, a well-worn tale in American thinking about people and nature. It is also a story that maps onto the Kawuneeche Valley landscape itself in a particularly forceful manner. It seems that more than a few Americans, after all, believe that the history of people and nature in our nation has followed a course roughly parallel to journey the Colorado River presently makes. Beginning in pristine purity and on high ground, the river begins to suffer from diversion and pollution on its downward course. By and by, it becomes fragmented, lessened, and, in some tellings, even wounded, its natural bounty wrecked and wasted by our ever-intensifying thirst for water, power, and wealth. This is, in many respects, a crude and predictable storyline: no cultural or social force analogous to gravity exists to drive the path of history ever downward, nor has our nation's actual history followed so confined a course. A narrative of decline fails to accommodate those many instances in which American environmental history has actually taken an upward or progressive twist or turn—the development of National Parks, for instance, or the recognition of ecological vulnerability that lay at the heart of the modern environmental movement.

⁶ Lina Barrera, "Portraits of Climate Change: The Rocky Mountains," Worldwatch Institute, 2011, online at: <http://www.worldwatch.org/node/6160> (accessed Oct. 4, 2011).

The course of the Kawuneeche's environmental history, this report argues, has not traveled along a consistently downward course. Instead, the human-environment interactions that have shaped the valley over decades, centuries, and millennia have been characterized by continuity as well as change, by resilience as well as destruction. It has been a complex history, one that holds its meanings far more closely than one might expect. By learning more about the environmental history of the Colorado River headwaters, we can place the problems of the present and the future in more useful and illuminating contexts. By merging the insights of history with those of the environmental sciences, we can gain a better appreciation for the close and mutual interconnection that has always linked the people of the Kawuneeche—inhabitants, wayfarers, and sojourners alike—to each other, as well as to the landscapes and ecosystems of the valley.

Chapter 1 begins by surveying interactions between various Native American groups and the Kawuneeche Valley environment, from the initial human inhabitation of the valley after the Last Glacial Maximum through the decline of the American fur trade in the mid-nineteenth century. Indian peoples across the long span of time seem to have largely lived within the strict constraints nature imposed on human life in the Kawuneeche. Occupying the valley only during warm seasons, and only in relatively small numbers, the northeastern Utes and their predecessors undoubtedly had significant local effects on ungulate populations and possibly some plant communities; on the whole, though, they initiated few substantial or long-lived transformations to the environments they inhabited. Low population densities, the unsuitability of most Kawuneeche ecosystems for the use of fire as a management tool, the valley's location in an area where agriculture has never proven feasible are also significant, and possibly native worldviews

together explain why the ecological impacts of native peoples were so light on these particular landscapes.

As for the profound transformations that began to ripple across the Americas after Columbus's voyages of the early 1490s, even these affected the Kawuneeche much more slowly and with less initial impact than in most of the other places on which environmental historians have focused their attention. Indeed, from the 1500s well into the 1800s, the Colorado River headwaters remained an extreme periphery. Distance and topography protected the valley from many of the horrors—epidemic disease, enslavement, conquest—experienced by native peoples elsewhere in the hemisphere during these same centuries. In time, though, the onset of colonialism in regions beyond the valley ultimately led to two important changes within the Kawuneeche: the Utes adopted horses, yet did so in a more culturally conservative manner than most of their counterparts in the American West; and Americans trapped out most of the beaver responsible for shaping the riparian ecosystems of the Colorado River and its tributaries.

The United States' defeat of Mexico in 1848 and the subsequent discovery of gold at the base of the Front Range of the Rocky Mountains in 1858 ushered in a new era—one in which neither the Utes nor their beloved mountain homelands would fare so well. As chapter 2 argues, white Coloradans began in the 1860s to prosecute a determined campaign to remove the Utes from the Rockies; only with the Indians gone, many newcomers reasoned, could they unlock the country's hidden mineral riches. The Utes, though, proved extremely reluctant to abandon the places their people had long inhabited; an ill-fated uprising at the White River Agency in 1879 finally precipitated the complete removal of Utes from Middle Park and the Kawuneeche Valley, though the hard-pressed Indians had made only rare appearances in the Grand County area after the mid-1870s.

Even as federal forces escorted the same Ute bands whose forebears had long inhabited the Kawuneeche to an isolated reservation in northeastern Utah, the valley was beginning to experience a frenzied mining rush. Unlike the Utes and their native precursors, who had lived primarily by hunting, fishing, and gathering plant foods, particularly in the riparian zone and the subalpine-alpine ecotone, the valley's new residents depended more on domesticated animals, foods imported from well beyond the Kawuneeche's confines, and even vegetables grown in the valley. They also came in greater numbers—the population of the two mining districts in the Kawuneeche may have numbered over 500 at one point, compared to a maximum estimated Ute family group size of roughly 100—and almost all tried to stick it out for the duration of the valley's harsh winters. Wildfires erupted with greater frequency in the late nineteenth century than over the previous decades, as the climate turned drier and the number of man-made ignitions increased. The newcomers, though favoring domesticated livestock and cultivated plants in their diets, nonetheless exerted forceful pressure on many of the Kawuneeche's animal populations. Bear, wolves, pine marten, cutthroat trout, deer, elk, bighorn sheep, and many other species almost certainly suffered declines in consequence, while beaver had probably not yet recovered from the fur-trade onslaught of the early nineteenth century.

Curiously enough, participants in the mineral rush tended to think about the natural world not simply as a repository of wealth, a larder of wild provisions, or a threatening force in need of taming. They also sometimes saw the Kawuneeche as an epitome of the Creator's creation, and they waxed eloquent about its sublimity. Such mental conceptions of the environment did little to make those who actively engaged in mining and prospecting think twice about the ultimate goal they had in mind for the Kawuneeche: transforming the valley into another Comstock Lode, Central City, or Leadville. All that stood in their way, miners, town speculators, and other

boosters felt, was a lack of railroad transportation and smelting facilities. The real shortcomings of the mines that sprouted like mushrooms in the valley of the North Fork of the Colorado River between 1876 and the mid-1880s, however, owed less to technology or geography and more to simple geology: the Kawuneeche's deposits were too poor to pay, and train routes and refining facilities would have done little to remedy this basic shortcoming.

By the 1890s, the valley had experienced in short succession two important depopulation events in short succession—Ute removal and the mining bust. Chapter 3 examines the next major phase in the Kawuneeche's environmental history—the slow and fitful emergence of a settler population in the valley, as well as the area's fuller incorporation into national economic, technological, and political systems. Between the 1880s and 1930, the Kawuneeche witnessed in microcosm the unfolding of three forces that were reshaping interactions between people and other elements of the natural world throughout the American West: water diversion, homesteading, and federal conservation. A company owned by farmers in Larimer County built the first transmontane diversion in the state of Colorado, the Grand Ditch, to intercept water from the Colorado River's tributaries and deliver it to the Cache La Poudre River via La Poudre Pass. As the ditch was causing extensive aesthetic, ecological, and hydrological changes to the western slopes of the valley, settlers were pushing onto the floor of the Kawuneeche. Acquiring land required little cash, given the generous provisions of the Homestead Act. But the valley proved a poor match for the sorts of agriculture Americans had traditionally practiced. Many prospective homesteaders consequently failed to prove up their claims. Those who held out and made the valley their home, by contrast, proved adept at juggling a range of activities—logging, trapping, hunting, fishing, ranching, cultivating hay, leaving the valley in search of wage work, sharing burdens with family members and neighbors, and so forth. The arrival of federal conservation,

first in the form of the Medicine Bow Forest Reserve of 1902, may have restricted settlers' ability to engage in some of these practices. Yet the most important consequence for homesteaders and settlers of the reservation of much of the valley's land in national forests and, eventually, Rocky Mountain National Park was the infusion of visitors that resulted. By the 1920s, most residents of the valley floor had begun to tap into the tourist market; others were effectively long-term tourists who earned their daily bread outside the valley's confines. Different ideas of and practices toward the natural world underpinned water diversion, homesteading, national forests dedicated to conserving scarce water and timber resources, and a national park mandated by Congress to protect nature while providing the general public with enjoyment. Tension and friction pervaded the relationships between these various entities. By 1930, the National Park Service had gained an inside edge in the struggle to control the Kawuneeche.

Chapter 4 analyzes the environmental history of the valley as the NPS expanded its hold over the Kawuneeche from 1930 up to the recent past. The Park Service's primary goals were to eliminate private land ownership, extend the borders of Rocky Mountain National Park, contain the problems posed by the Grand Ditch, restore so-called "natural conditions" to those portions of the valley altered by the mineral rush and settlement, and protect the Kawuneeche from wildfires, insect pests, resort development, and other real and perceived threats. If the period from the 1880s through 1930 was characterized by heterogeneous paths of development, the period since 1930 has witnessed a concerted attempt by the Park Service to homogenize ownership and management, and ultimately to turn back the clock on historical change in the Kawuneeche so that the valley's landscapes and ecosystems might resemble more closely the wilderness ideal that lay at the heart of the founding ideals of the Park Service. The genies of

environmental change and complexity, however, have proven almost impossible for the Service to re-cork. Moreover, Park expansion still resulted in a management unit vulnerable to all sorts of threats capable of traversing human-made boundaries. The most evident and alarming of these, the mountain pine beetle epidemic that reached the Kawuneeche in the early 2000s, has probably led to the most visible instance of rapid environmental change to hit the valley since the large wildfires of the late nineteenth century.

The longer-term consequences of the bark beetle epidemic may turn out to be less dire than many observers have feared. Indeed, the greatest threat to the health of the Kawuneeche environment probably involves not the subalpine forests of the valley's wooded flanks, but the willow thickets that blanket the Colorado River bottomlands. Chapter 5 offers an in-depth study of historical interactions between people, elk, beaver, moose, and willows in the valley. Rocky Mountain National Park officials began to fear as early as 1930 that overpopulated elk herds were decimating aspen and willow. Until very recently, though, NPS assessments of Rocky's elk problem were confined to the Park's east side. In recent years, though, the introduction of moose by the Colorado Division of Wildlife just outside RMNP boundaries has combined with dramatic increases in elk populations (a direct consequence of the woefully misguided Park policy known as "natural regulation" adopted in the 1960s and pursued up until the late 2000s), drought, and other factors to weaken the ability of the valley's willows to generate new growth. Beavers, which had substantially recovered from fur-trapping by the mid-twentieth century, have now almost entirely abandoned the Kawuneeche.

Chapter 1

Native Peoples and the Kawuneeche Valley Environment

For centuries, perhaps even millennia, the Kawuneeche Valley comprised a periphery of the homelands of a loosely-organized group of peoples who called themselves *Nuche* (“the people”), and who would become known to most Anglos as Utes.¹ The many millennia of human occupation that preceded the Utes left no written documents whatsoever, and precious few human artifacts. The limited historical evidence on the Colorado River headwaters prior to the 1880s thus continues to hamper our understanding of the origins and evolution of human-environment interactions in the valley.

Fortunately, the *Nuche* and other Native Americans left many other traces of their presence in and around the Kawuneeche. These traces reveal both the underlying continuities in native interactions with the Kawuneeche environment between the deep past and the incorporation of the Colorado Rockies into the United States, and the significant changes that have remolded both the Kawuneeche and its inhabitants over the eons. A diverse and shifting assortment of Native American individuals and groups inhabited the Kawuneeche. Populations of these groups, however, always remained too few, the Indians’ wants too bounded, and their forays into the valley too circumscribed in duration and purpose for them ever to have restructured the basic configurations of life in the valley. The valley’s native inhabitants, never achieved—and, for that matter, never seem to have sought—dominance over other elements of the valley ecosystem.

¹ “I have found in no instance,” reported John Wesley Powell in 1873, “do the white men know the Indians by their true names.” John Wesley Powell, *Report of Explorations in 1873 of the Colorado of the West and Its Tributaries* (Washington: G. P. O., 1874), 26.

Because Indian peoples had inserted themselves with such success into the webs of relationships that linked humans with other beings and processes in the Kawuneeche and its surroundings, the removal of the Utes from the Kawuneeche by 1879 had important ecological consequences. Human predation of game species temporarily declined, food plants no longer received a helping hand from Nuche women, grasses grew higher without Indian horse herds chomping them down, and sacred sites went unsung. As miners, homesteaders, and others subsequently began to move into the voids produced by American conquest, these newcomers would bring wholly different modes of living with—and living against—the Kawuneeche’s natural systems.

Origins: Early Native Americans and the Kawuneeche Environment

The most recent archaeological survey of Rocky Mountain National Park—by far the most ambitious ever undertaken—has uncovered hundreds of sites attesting to extremely long and complex histories of Native American inhabitation, use, and sanctification in and around the Park.² Archaeological researchers led by Robert Brunswig of the University of Northern Colorado have divided these sites into more than a dozen categories; the variety of these suggests that native peoples forged a very wide range of relationships with the environments they inhabited: “Native American Battle Sites,” “Open Camps,” “Sheltered Camps,” “Rock Shelters,” “Lithic Scatters,” “Ground Stone Scatters,” “Ceramic Scatters,” “Lithic Quarry,” “Ritual Features,” “Wickiup Sites,” “Hunting Blinds,” “Game Drives,” “Stone Rings,” and

² A site is defined as a location containing 10 or more artifacts. Robert H. Brunswig, *Prehistoric, Protohistoric, and Early Historic Native American Archaeology of Rocky Mountain National Park*, vol. 1, *Final Report of Systemwide Archaeological Inventory Program Investigations by the University of Northern Colorado (1998-2002)*, National Park Service Project ROMO-R98-0804 (Greeley, Colo.: University of Northern Colorado, 2005).

“Culturally Peeled Trees.”³ The vast majority of known archaeological sites occupy the Park’s east side, though Pontiac Pit, the Bighorn Flats-Sprague Pass complex, and a number of other important finds lay within the greater Kawuneeche.

Given the relative paucity of direct archaeological evidence from the valley, not to mention the Kawuneeche’s place within a larger ecological and cultural mosaic, we can best begin to understand the valley’s early environmental history by placing it in a broader regional context. Such a context necessarily includes the high country and eastern foothills of the Front Range; Middle Park and North Park (two large intermountain valleys to the south and northwest of the Kawuneeche); and the Colorado Piedmont, the swath of high plains that adjoin the Rocky Mountain foothills. The Kawuneeche, like most any other place on the planet, has been shaped since time immemorial by dynamics unfolding beyond its borders. What follows is a story of context and connection, but also of continuity and change, migration and trade, adaptation and the transformation of spaces—material realms devoid of human associations—into places—landscapes inhabited by human beings and invested by them with meaning through stories, beliefs, and practices.⁴

The Kawuneeche Valley possesses a human history the extent and depth of which belies any assumption that the Rocky Mountains impeded and overawed North America’s supposedly primitive and technologically unsophisticated native inhabitants.⁵ Archaeologists continue to

³ Ibid., 96-8.

⁴ The classic theoretical work on space and place in geography remains Yi-Fu Tuan, *Space and Place: The Perspective of Experience* (Minneapolis: University of Minnesota Press, 1977).

⁵ For a quick review of the development of Paleoindian archaeology in the Colorado high country, see Robert H. Brunswig and Bonnie L. Pitblado, “Introduction,” in *Frontiers in Colorado Paleoindian Archaeology: From the Dent Site to the Rocky Mountains*, ed. Robert H. Brunswig and Bonnie L. Pitblado (Boulder: University Press of Colorado, 2007), 1-3 and .

debate the origins, timing, and diffusion of human migrations to the Americas.⁶ But presumably the peopling of what is now Rocky Mountain National Park began as rising temperatures sent the large mountain glaciers that spilled down into the Kawuneeche from the peaks above for tens of thousands of years into a terminal retreat between about 15 kyr BP (thousands of calendar years Before Present) to 11 kyr BP.⁷ No archaeological site located anywhere near Colorado has produced valid evidence of human artifacts dating prior to the Clovis period (12.8 to 13.1 kyr BP).⁸ Pre-Clovis Paleoindians may have ventured into the lower-lying parts of Colorado, but they almost certainly would have avoided the mountains. Through the end of the last ice, after all, the high country remained icy, arid, and practically uninhabitable.⁹

⁶ For a recent discussion, see T. Goebel, M. R. Waters, and D. H. O'Rourke, "The Late Pleistocene Dispersal of Modern Humans in the Americas," *Science* 319 (2008), 1497–1502.

⁷ On the timing of deglaciation within RMNP, see RMNP, *Geology Fieldnotes*, last updated Aug. 9, 2007, accessed July 20, 2011, <http://www.nature.nps.gov/geology/parks/romo/index.cfm>; James P. Doerner, "Late Quaternary Prehistoric Environments of the Colorado Front Range," in *Frontiers in Colorado Paleoindian Archaeology*, ed. Brunswig and Pitblado, 18-19. Most archaeological and paleoecological sources cited here rely on radiocarbon dating, but researchers typically use calibration programs to translate radiocarbon dates into calendar years. This, together with shifting conventions regarding the appropriate benchmark—Before the Christian Era or Before Present—usually accounts for any apparent disparities between the dates I use here and other dates readers may encounter in the literature.

⁸ On lack of pre-Clovis sites, see Alan D. Reed and Michael D. Metcalf, *Colorado Prehistory*, 56; Bonnie L. Pitblado and Robert H. Brunswig, "That Was Then, This is Now: Seventy-Five Years of Paleoindian Research in Colorado," in *Frontiers in Colorado Paleoindian Archaeology*, ed. Brunswig and Pitblado, 45-46. Scholars have pushed back the suspected timing of the Clovis period; here I use the new Clovis chronology, but in the rest of this section, I follow Brunswig's chronology. Readers should beware of placing too much stock in precise dates, given the complexities inherent in dating archaeological sites. Alan D. Reed and Michael D. Metcalf, for example, identify the Clovis as falling between 13.4 and 12.5 kyr BP; *Colorado Prehistory: A Context for the Northern Colorado River Basin* (Denver: Colorado Council of Professional Archaeologists, 1999), 56. The most recent evidence for Pre-Clovis inhabitation of the Americas comes from the Buttermilk Creek site in Texas, with man-made tools conservatively dating back to 13.2 to 15.5 kyr BP. Michael R. Waters, Steven L. Forman, Thomas A. Jennings, Lee C. Nordt, Steven G. Driese, Joshua M. Feinberg, Joshua L. Keene, Jessi Halligan, Anna Lindquist, James Pierson, Charles T. Hallmark, Michael B. Collins, and James E. Wiederhold, "The Buttermilk Creek Complex and the Origins of Clovis at the Debra L. Friedkin Site, Texas," *Science* 331 (March 25, 2011), 1599-1603; see *ibid.*, 1602 for a listing of current evidence of pre-Clovis inhabitation in the Americas.

⁹ Brunswig, *Prehistoric, Protohistoric, and Early Historic Native American Archaeology of Rocky Mountain National Park*, 68. Archaeologists generally use the term "Paleoindian" to refer to biologically modern humans who inhabited Colorado prior to roughly 7.5 radiocarbon kyr BP. Brunswig

The early Clovis climate remained fairly cold. Yet temperatures had risen and precipitation had fallen sufficiently to cause valley glaciers in the Colorado Rockies to retreat substantially.¹⁰ As the Kawuneeche's glaciers retreated, plants slowly began to colonize ground that had been covered with hundreds of feet of ice for most of the previous twenty millennia. In time, new alpine and subalpine ecosystems began to flourish, supporting a broad range of birds, insects, mammals, and other creatures. Hunter-gatherers using Clovis points evidently ventured higher and higher into the mountains during the summer months, presumably in search of mastodons, giant bison, and other large mammals—the so-called “Pleistocene megafauna” that was bound for extinction during the tumultuous climatic and cultural changes that characterized the turn from glacial to interglacial conditions.¹¹ Clovis hunters would have possessed little experience with high-country environments, since ice had covered most mountainous regions of North America since around 30 kyr BP.¹² All Clovis artifacts discovered thus far in Rocky Mountain National Park, including those from sites in or near the Kawuneeche (La Poudre Pass, Milner Pass, and Bighorn Flats), were manufactured from rock obtained in Middle Park. These artifacts strongly suggest that migration between Middle Park and the Continental Divide—a pattern that remained strong until Nuche removal of the nineteenth century—had already become

and Pitblado, “Introduction,” 3. Doerner compares glacial conditions in Colorado's high country to “the climate found in parts of northern Siberia today,” with mean July temperatures 10-11 degrees C colder than at present, and mean January temperatures 26 to 29 degrees C lower than at present. “Late Quaternary Prehistoric Environments of the Colorado Front Range,” 28

¹⁰ Some archaeologists speculate that a period of “rapid and dramatic warming” known as the late Clovis drought began around 11.1 kyr BP. Brunswig, *Prehistoric, Protohistoric, and Early Historic Native American Archaeology of Rocky Mountain National Park*, 69. Other paleoclimatic records, however, suggest that conditions were relatively moist around this time. See Fig. 2-7 in Reed and Metcalf, *Colorado Prehistory*, 22.

¹¹ Brunswig, *Prehistoric, Protohistoric, and Early Historic Native American Archaeology of Rocky Mountain National Park*, 70.

¹² *Ibid.*, 69. On timing of Pinedale glaciation in RMNP, see RMNP, *Geology Fieldnotes*; Doerner, “Late Quaternary Prehistoric Environments of the Colorado Front Range,” 17. Most authorities place the maximum extent of Pinedale glaciers between 19 kyr BP and 23.5 kyr BP. *Ibid.*, 16.

well established at this early point in the Kawuneeche's human history.¹³ If archaeologists are correct in surmising that Clovis hunters were highly migratory and lacked effective technologies for preserving food, then inhabitation of the Kawuneeche during this period would have been transitory and Clovis understandings of the Kawuneeche's ecosystems limited largely to the know-how required to track, hunt, and process roving large game species.¹⁴

Native peoples may have occupied the Kawuneeche even less frequently in the next several millennia of the archaeological record. From roughly 11.1 kyr BP to 8.0 kyr BP, the peoples known to archaeologists through Goshen-Plainview projectile technologies hunted large, now-extinct bison (*Bison antiquus*) in Middle Park during the fall and early winter, then shifted to hunt other game species from the same camps between late winter through summer. The Folsom culture complex (10.9-10.0 kyr BP) overlapped for a few centuries with Goshen-Plainview complex; Folsom-era digs are characterized by "larger kill sites and the presence of more specialized bison-focused kill and processing areas in the mountain valleys and eastern foothills and plains of Colorado."¹⁵ Though *Bison antiquus* was their staple, Folsom peoples also hunted pronghorn, rabbit, and even turtles.¹⁶ Intriguingly, archaeologists have yet to find any Folsom sites within Rocky Mountain National Park, perhaps because the Folsom complex

¹³ Brunswig, *Prehistoric, Protohistoric, and Early Historic Native American Archaeology of Rocky Mountain National Park*, 106-107.

¹⁴ Reed and Metcalf, *Colorado Prehistory*, 61-62.

¹⁵ *Ibid.*, 70-71. For a seminal work that proposes an identity between the Plainview complex found on the southern plains and the Goshen complex typical of the northern plains, see George Frison, ed., *The Mill Iron Site* (Albuquerque: University of New Mexico Press, 1996); for more on the various chronological issues regarding Paleoindian occupation of various parts of the Great Plains, see Vance T. Holliday, "The Evolution of Paleoindian Geochronology and Typology on the Great Plains," *Geoarchaeology* 15 (2000), 227-290. As Robert H. Brunswig notes, "The [Goshen-Plainview] complex and its defining Goshen projectile point type . . . remains [sic] a focus of typological and cultural discussion." Robert H. Brunswig, "Paleoindian Cultural Landscapes and Archaeology of North-Central Colorado's Southern Rockies," in *Frontiers in Colorado Paleoindian Archaeology*, ed. Brunswig and Pitblado, 273.

¹⁶ Brunswig, *Prehistoric, Protohistoric, and Early Historic Native American Archaeology of Rocky Mountain National Park*, 71.

may have coincided with a period of renewed glaciation known as the Younger Dryas.¹⁷ As temperatures cooled, permanent snowfields began to accumulate through much of the high country; with ice and snow now covering up prime patches of terrain, herbivores and human hunters alike would have found the Rockies increasingly inhospitable.¹⁸ Southwest of Rocky Mountain National Park, however, in Middle Park, Folsom sites are as dense as anywhere in North America—probably because the area’s grasslands provided year-round forage for herds of *Bison antiquus* unable to survive as advancing ice reduced the quantity of grazing land available in the high country.¹⁹ Through the Folsom and Goshen-Plainview periods, then, the Kawuneeche Valley remained a place inhabited and used only sporadically by Paleoindian peoples. Just one Goshen-Plainview point has been recovered from RMNP’s west side, at Milner Pass, suggesting that despite glacial advances, some of the high country remained “open to human transit for a time after the Clovis Period”; Folsom sites have also proven “extremely rare in higher-elevation subalpine and alpine zones,” with only one point found in RMNP, at Forest Canyon Pass on the east side.²⁰

After a long period of relatively light inhabitation, Rocky Mountain National Park became an integral site between 9.3 and 7.0 kyr BP to an emerging set of lifeways known to

¹⁷ Brunswig places the Younger Dryas at 10.8 to 10.1 kyr BP; *ibid.*, 49. Doerner notes that Colorado’s Satanta Peak glacial advance correlates with the global Younger Dryas event. “Late Quaternary Prehistoric Environments of the Colorado Front Range,” 18-19. Paleoclimatologists and paleoecologists continue to debate when, how, and with what effects glaciers entered a new phase of advance in the Colorado Rockies.

¹⁸ Brunswig, *Prehistoric, Protohistoric, and Early Historic Native American Archaeology of Rocky Mountain National Park*, 71-73, 108. These findings are consistent with data from other parts of Colorado as well as Utah; one scholar, for instance, “observed that early Paleoindian finds tend to cluster along major rivers, where habitats may have been best suited for megafauna, and suggested most intensive occupation of riverine environments.” Reed and Metcalf, *Colorado Prehistory*, 62.

¹⁹ Brunswig, *Prehistoric, Protohistoric, and Early Historic Native American Archaeology of Rocky Mountain National Park*, 73; on the year-round nature of Goshen-Plainview inhabitation of Middle Park, see Brunswig, “Paleoindian Cultural Landscapes and Archaeology,” 274.

²⁰ *Ibid.*, 274-275.

archaeologists as the “mountain tradition.”²¹ The essence of these lifeways were “adaptations to high-altitude environments that differentiated them from groups on the adjacent plains and other lowland regions.”²² The return of warmer, moister conditions encouraged prolific growth of tundra vegetation; better pasture brought hungry game species such as elk, mule deer, bighorn sheep, and possibly bison; and the presence of these creatures, in turn, drew native peoples to migrate higher into the mountains during the warmer months.²³ Brunswig hypothesizes: “a series of closely related, mountain-adapted groups began to occupy lower mountain valleys in winter and hunt game in the higher-altitude areas in summer.”²⁴ These “indigenous, mountain-adapted Late Paleoindian populations ... developed the regions’ earliest sustained, seasonally transhumant, high altitude hunting systems.”²⁵

Practitioners of the mountain tradition in the Late Paleoindian period differed from their Clovis, Folsom, and Goshen-Plainview predecessors in several important respects. Start with

²¹ Brunswig prefers the plural to recognize the likelihood that these were complex and multifarious groups; he also uses “foothills-mountain traditions.” I prefer “mountain tradition” because it is simpler, and it better recognizes the prevailing patterns of migration between the Kawuneeche and points west. Mountain Paleoindians employed several projectile points and may have differed in other culturally significant ways, too. See Bonnie L. Pitblado, “Angostura, Jimmy Allen, Foothills-Mountain: Clarifying Terminology for Late Paleoindian Southern Rocky Mountain Spear Points,” in *Frontiers in Colorado Paleoindian Archaeology*, ed. Brunswig and Pitblado, 328.

²² Pitblado and Brunswig, “That Was Then, This Was Now,” 50. Mark Stiger interprets a classic archaeological essay as defining “tradition” based on “temporal continuity in technologies or other systems of related forms.” Mark Stiger, *Hunter-Gatherer Archaeology of the Colorado High Country* (Boulder: University Press of Colorado, 2001), 18. Kevin D. Black defines the Mountain tradition as an “adaptation to upland terrain, over an extended length of time and covering a broad geographical area.” “Archaic Continuity in the Colorado Rockies: The Mountain Tradition,” *Plains Anthropologist* 36 (1991), 4. Stiger criticizes Black for ending the Mountain tradition once Numic migrants had supposedly arrived in the Rockies, a critique I pursue below. *Hunter-Gatherer Archaeology of the Colorado High Country*, 19. It seems possible that Goshen-Plainview hunters, who seem to have inhabited Middle Park for most or all of the year, may have initiated the Mountain or Foothill-Mountain Tradition. Reed and Metcalf, *Colorado Prehistory*, 66-67.

²³ Brunswig, “Paleoindian Cultural Landscapes and Archaeology,” 278. Revealingly, “Nearly half (47.1 percent) of RMNP’s thirty-four late Paleoindian components are situated above tree line on sites associated with what are inferred as warm-season tundra hunting territories.” *Ibid.*, 290.

²⁴ Brunswig, *Prehistoric, Protohistoric, and Early Historic Native American Archaeology of Rocky Mountain National Park*, 76.

²⁵ *Ibid.*, 232-33.

preferred quarry: while previous inhabitants of RMNP all seem to have concentrated on mastodon and *bison antiquus*, the extinction of these species led Mountain Paleoindians to focus on elk, bighorn sheep, pronghorn antelope, and deer. These native peoples also employed different tools and methods in their quest to extract livelihoods from the valley's ecosystems.²⁶ Earlier peoples seem to have relied largely on imported lithic materials for making projective points, but many of the projectile points found in the vicinity of Big Horn Flats and Sprague Pass derived from "local" quarrying sites (from within 37 miles or 60 kilometers of any park boundary), mostly in Middle Park and the foothills of the Front Range's east side.²⁷ Mountain Paleoindians not only obtained their tools locally and occupied the Rockies year-round; they also began to perfect "game drive strategies that involved maneuvering animals along topographic depressions, saddles and ridgelines into ambush points where hunters could conceal themselves."²⁸ Several Late Paleoindian camps in the Big Horn Flats region of Rocky's west

²⁶ Brunswig, "Paleoindian Cultural Landscapes and Archaeology," 294; Reed and Metcalf, *Colorado Prehistory*, 57, 68-69. The latter source suggests that people of the "Foothill-Mountain complex . . . perhaps more intensively exploited floral foodstuffs" (ibid., 57).

²⁷ Other lithic materials, however, originated in southern Wyoming, suggesting that the Paleoindians who camped in Big Horn Flats may have spent at least part of some years in regions to the north. Brunswig, *Prehistoric, Protohistoric, and Early Historic Native American Archaeology of Rocky Mountain National Park*, 112-113.

²⁸ Ibid., 77. On the Mountain-Foothills traditions as "indigenous" to mountains, see Reed and Metcalf, *Colorado Prehistory*, 67. On warm climate, see Doerner, "Late Quaternary Prehistoric Environments of the Colorado Front Range," 28. On game drive sites, see the voluminous work of archaeologist James B. Benedict: *The Game Drives of Rocky Mountain National Park* (Ward, Colo.: Center for Mountain Archeology, 1966); "Getting Away from It All: A Study of Man, Mountains, and the Two-Drought Altithermal," *Southwestern Lore* 45 (1979), 1-12; "The Fourth of July Valley: Glacial Geology and Archeology of the Timberline Ecotone," Center for Mountain Archaeology Research Report No. 2 (Ward, Colo.: Center for Mountain Archaeology, 1982); "Arapaho Pass: Glacial Geology and Archeology at the Crest of the Colorado Front Range," Center for Mountain Archaeology Research Report No. 3 (Ward, Colo.: Center for Mountain Archaeology, 1985); "Archeology of the Coney Creek Valley," Center for Mountain Archaeology Research Report No. 1 (Ward, Colo.: Center for Mountain Archaeology, 1990); "Footprints in the Snow: High-Altitude Cultural Ecology of the Colorado Front Range, U.S.A.," *Arctic and Alpine Research* 24 (1992), 1-16; "Effects of Changing Climate on Game-Animal and Human Use of the Colorado High Country (U.S.A.) since 1000 B.C.," *Arctic, Antarctic, and Alpine Research* 31 (1999), 1-15; "Game Drives of the Devil's Thumb Pass Area," pp. 18-94 in E.S. Cassells, ed., *This Land of Shining Mountains: Archeological Studies in Colorado's Indian Peaks*

side, astride key travel routes linking the Colorado River Basin and the Front Range via Tonahutu Creek and either Sprague Pass or Flattop Mountain, together made up “a system of short-term, secondary base (staging) camps (one with sandstone metate fragments) in the alpine-subalpine ecotone, alpine hunting localities (isolated point finds and small lithic re-tooling scatters), and short-term alpine-based game processing camps (with projectile points, knives, scrapers, and re-tooling debris).”²⁹

The mountain tradition endured through the next major archaeological period, the Early Archaic (7.0-4.5 kyr BP); indeed, during this period, the alpine and subalpine zones may have supported the largest human populations yet witnessed in the Kawuneeche.³⁰ As the climate on the Great Plains grew hot and dry, the Rockies offered a “refugium for peoples abandoning the drought-stricken Plains.”³¹ Across time, the Northern Colorado River Basin has boasted “greater carrying capacity than neighboring areas,” Alan Reed and Michael Metcalf note, “and this

Wilderness Area, Center for Mountain Archaeology Research Report No. 8 (Ward, Colo.: Center for Mountain Archaeology, 2000); “Rethinking the Fourth of July Valley Site: A Study in Glacial and Periglacial Geoarchaeology,” *Geoarchaeology* 20 (2005), 797-836; and James B. Benedict and Byron L. Olson, eds., *The Mount Albion Complex. A Study of Prehistoric Man and the Altithermal*, Center for Mountain Archaeology Research Report No. 1 (Ward, Colo.: Center for Mountain Archeology, 1978); See also E. Steve Cassells, “Hunting the Open High Country,” (Ph.D. diss., University of Wisconsin-Madison, 1995).

²⁹ Brunswig, *Prehistoric, Protohistoric, and Early Historic Native American Archaeology of Rocky Mountain National Park*, 111.

³⁰ I follow Reed and Metcalf’s caveat that “The Archaic era . . . is simply a span of time during which there are a series of cultural changes and good deal of cultural continuity. There is no single defining characteristic that satisfactorily separates the Archaic era from the periods on either side of it. . . . The traditional approach of looking at the Archaic as a stage or as a way of life is not particularly satisfactory in the study area, because in many ways, an Archaic lifeway was practiced in the region from sometime [sic] during the Late Paleoindian period until European trade goods and horses began to transform the indigenous cultures.” Reed and Metcalf, *Colorado Prehistory*, 71.

³¹ Brunswig, *Prehistoric, Protohistoric, and Early Historic Native American Archaeology of Rocky Mountain National Park*, 80. Note that James Benedict, who first proposed the idea that the high country served as a refugium during the altithermal, eventually wavered in his support of this hypothesis. Contrast his 1979 article, “Getting Away from It All” with his 2005 article, “Rethinking the Fourth of July Valley Site.” Several proxy climate records from the Rockies seem to support the notion of an Altithermal, though conditions in much of the high country were wetter than today, not drier. Still, Reed and Metcalf suggest that the northern and southern Colorado River Basin diverged, with the northern region beginning to dry out around 7.3 kyr BP. Reed and Metcalf, *Colorado Prehistory*, 25, 29-30.

contrast would be especially marked during times of drought.”³² Archaeologists have found two significant Early Archaic sites along the floor of the Kawuneeche Valley.³³ Both sites seem consistent with the most important development of the Archaic: the emergence of a “lifeway [that] formed a long-term, relatively stable, and very effective and adaptable way for people to live.” This lifeway was based not on the “limited set of widespread resources” exploited by Paleoindians, who focused almost entirely on hunting big game, but rather on the utilization of “a more diverse set of local resources” by peoples who were developing more intimate and specialized understandings of the various ecosystems from which they drew sustenance, shelter, and sacred power.³⁴

For two millennia following the conclusion of the Early Archaic, the climate again grew cooler and wetter. Episodes of neo-glaciation and increasingly severe snowstorms blowing upslope from the Great Plains brought deeper snows to the mountains.³⁵ In response, Native American populations during the Middle and Late Archaic may have moved to progressively lower elevations over time, shifting more of their resource-procurement efforts to the Kawuneeche Valley floor from the tundra and alpine-subalpine ecotone above.³⁶

Toward the end of the Late Archaic (3.0-1.85 kyr BP), smaller and more delicate projectile points appear, probably because of the arrival of bow-and-arrow technology from the Great Basin. The provenance of tool materials shifted slightly during this period, too; from the Paleoindian era onward, sites contain an average of roughly 75% local materials, but during the

³² Ibid., 32. Though these authors agree with the general premise that drier conditions on the plains may have driven native peoples to higher-elevation locales, they also argue that “evidence for wholesale abandonment [of the Plains] is just not there” [97].

³³ Brunswig, *Prehistoric, Protohistoric, and Early Historic Native American Archaeology of Rocky Mountain National Park*, 114-115.

³⁴ Reed and Metcalf, *Colorado Prehistory*, 71, 88.

³⁵ Brunswig, *Prehistoric, Protohistoric, and Early Historic Native American Archaeology of Rocky Mountain National Park*, 82.

³⁶ Ibid., 115-117.

Late Archaic, the mix shifted toward greater use of “exotic” sources, including quartzite from south-central Wyoming, petrified wood from the eastern plains and piedmont, and chert from South Park and the eastern Colorado Plains.³⁷ This shift suggests an intensification of trade and/or migration.³⁸ Synthetic interpretations of the Archaic in the Colorado high country suggest three other important developments: that family groups likely joined together into larger aggregations during the resource-rich salad days of late summer and fall, that Archaic peoples developed better understandings of a broader range of local flora and fauna than their highly mobile Paleoindian predecessors ever had, and that “periodic and probably abrupt changes” in regional climate “whipsawed the cultures of the region.”³⁹

From Clovis times through the Late Archaic, RMNP’s archaeological record documents considerable environmental and cultural change. Yet the profound continuities in human-environment interactions that defined the enduring Mountain Tradition deserve at least as much notice. For a region of remarkable climatic and ecological dynamism, north-central Colorado fostered a surprisingly durable set of human lifeways. Change, in other words, unfolded within sharply constrained bounds; the hold of those bounds wavered through the millennia, but never relented completely.

Not a shred of archaeological or ethnographic evidence suggests that native peoples ever used the Kawuneeche as a long-term wintering ground, nor have any “rich stratified cultural occupations reflective of such extended residence” ever been discovered anywhere within

³⁷ Ibid., 118-119.

³⁸ The Archaic did witness remarkable diversity in projectile point types, and new types of dwellings such as pit houses and basin houses do seem to have become more common. Reed and Metcalf, *Colorado Prehistory*, 80-86. But with these exceptions, most technologies seem to have remained quite similar to those found at Paleoindian sites.

³⁹ Ibid., 89, 96. Reed and Metcalf caution that “interpretations [of patterns of floral and faunal exploitation] are hindered by sample sizes” [92].

RMNP boundaries.⁴⁰ Instead, native peoples of the Paleoindian and Archaic eras seem always to have occupied the Kawuneeche seasonally. Archaeologist James Benedict has suggested that Mountain Tradition peoples selectively pursued two broad patterns of seasonal migration. Benedict's "Up-Down" pattern involved latitudinal movement between low elevation winter sites, probably in the eastern Colorado foothills, to the tundra atop the Continental Divide; a second pattern, the "Grand Rotor," entailed circular movement from the eastern Colorado foothills over low passes into present-day northern Colorado and southern Wyoming, followed by a southeasterly thrust into North Park and Middle Park, and finally an eastward ascent into the high country of the Rockies during the summer months before descending to winter in the foothills or along the piedmont.⁴¹ Different groups may have pursued slightly different patterns from year to year, or diverse groups may have employed the present-day area of Rocky Mountain National Park as a focal point in otherwise disparate patterns whose core feature was the exploitation of various altitudinally-stratified environments at different points of the year. Archaeological evidence from RMNP is broadly consistent with both patterns, though the high percentage of lithic materials found in the Park derived from Middle Park quarries strongly suggests that native peoples probably wintered more often in Middle Park and valleys to the west than they did in the eastern foothills of the Rockies.⁴²

In both the Up-Down and Grand Rotor models, family groups would have wintered in lower elevation valleys, then ascended to the Kawuneeche and other montane and subalpine

⁴⁰ Brunswig, *Prehistoric, Protohistoric, and Early Historic Native American Archaeology of Rocky Mountain National Park*, 230.

⁴¹ On these patterns, see Benedict, "Footprints in the Snow."

⁴² Brunswig, "Prehistoric, Protohistoric, and Early Historic Native American Archaeology of Rocky Mountain National Park," ch. 7. As Reed and Metcalf explain, "travel through the broad band of foothills coniferous forest" was difficult because such ecosystems presented "relatively few opportunities for foragers. ... Conversely, in much of the Northern Colorado Basin, good-quality summer range is in proximity to sheltered valleys and basins, and there is minimal 'dead zone' that is resource poor." *Colorado Prehistory*, 89.

valleys in and around RMNP between mid- to late-spring and early summer. As the greening of alpine and subalpine pastures lured bighorn sheep, elk, bison, and mule deer to higher country from mid-summer to early fall, bands of hunter-gatherers, particularly the more able-bodied members of these bands, moved to the flanks of the Front Range, the Never Summers, and other alpine areas. Using a combination of man-made features (game drives, blinds, and so forth) and components of natural topography (such as boulders behind which hunters could hide), hunters attempted to turn the summer bounty of game in the high country to their advantage. After butchering their kill at high-altitude camps located close to the hunting grounds, Indians packed meat to secondary processing camps located in the subalpine-alpine ecotone, or in the subalpine forests below.⁴³

No people, however, can live on meat alone. Archaeological sites from the Paleoindian and Archaic eras in RMNP offer frustratingly scant evidence regarding the plant foods these peoples undoubtedly gathered from the Kawuneeche. Surely the same long days and warm temperatures that brought Indian hunters to the high country would also have provided a range of edible and medicinal plants for harvest. Berries from dwarf blueberry (*Vaccinium cespitosum*), squawbush (*Rhus aromatica*), wax currant (*Ribes cereum*), and buffalo berry (*Shepherdia argentea* and *Shepherdia canadensis*) could be eaten fresh, dried, or pulverized in sandstone *metates* lugged up from the eastern foothills of the Front Range and mixed with animal fat and tallow in pemmican. Roots such as bitterroot (*Lewisia pygmaea*), yarrow (*Achillea lanulosa*), bistort (*Bistorta/Polygonum bistortoides* and *Bistorta/Polygonum viviparum*), and Indian potato (*Claytonia lanceolata* and *Claytonia rosea*) offered critical sources of carbohydrates; pulverized and dried, these plants also provided a year-round supply of flour-like powders that could be

⁴³ On game drives, see the previous note on the work of James Benedict, E. Steve Cassells, and others.

used in stews, breads, and other dishes. Bulbs of Geyer onion (*Allium geyeri*), seeds from alpine sunflower (*Rhydbergia grandiflora*), and the bulbs, roots, and seeds of the Mariposa lily (*Calochortus gunnisonii*) also attracted interest from gathering parties.⁴⁴ The absence of skeletal remains from RMNP has prevented researchers from analyzing the health of the Park's native peoples; presumably the busy months Indian peoples spent within the park, however, were the most bountiful of the year, with ample supplies of fresh, tasty, and healthful foods.

Early fall usually brought the first signs of the cold to come; with winter, the amount of caloric energy humans could access from the Kawuneeche began to wane. By late fall, many large mammals abandoned the high country; as the weather grew fierce and snow accumulated, remaining elk and bighorn sheep grew leaner and often more difficult to hunt. Indigenous people consequently left the high country and filtered down to establish winter camps in lower-elevation valleys and parks.⁴⁵

Over the millennia, climatic and ecological changes compelled the native peoples in and around the Kawuneeche Valley to adapt or perish. Periods of renewed glaciation covered some tundra habitats with ice; wetter conditions tended to pull subalpine forests species up into areas formerly covered with tundra, replacing ecosystems native peoples found relatively rich in resources with comparatively impoverished coniferous habitats; and periods of cooling and warming more intense than any documented since instrumental weather records began in the nineteenth century forced peoples of the Paleoindian and Archaic eras to alter or abandon time-honored migration patterns. Nature, in other words, maintained the upper hand in the

⁴⁴ John A. Brett, *Ethnographic Assessment and Documentation of Rocky Mountain National Park* (Denver: University of Colorado Denver Department of Anthropology, 2002), 67-73;

⁴⁵ Brunswig, *Prehistoric, Protohistoric, and Early Historic Native American Archaeology of Rocky Mountain National Park*, 236-242.

Kawuneeche Valley.⁴⁶

It should thus come as no surprise that even as native peoples labored to incorporate energy and nutrients from the Kawuneeche Valley's ecosystems into their bodies, they also dedicated themselves to enlisting, honoring, and assuaging the sacred forces they understood to suffuse and govern the environments they inhabited. Archaeologists have discovered vision quest sites, burial sites, and other places of native worship throughout Rocky. The indigenous inhabitants of the Front Range, like many Native Americans, almost certainly possessed considerable astronomical knowledge. The sun, moon, and various constellations all helped Indian peoples to orient themselves in time and space.⁴⁷ Rock walls, stone circles, and a number of other apparent sacred sites made by Native Americans within the present Park boundaries, for instance, align with sunrise or sunset on the summer solstice.⁴⁸

Nature undeniably and profoundly structured Paleoindian and Archaic lifeways. As the Kawuneeche's native peoples sought to survive and thrive in environments subject to extreme variations—from day to day, year to year, and era to era—they could never engage in the fantasy of imagining themselves as separate from the natural world. Inextricably enmeshed in the valley's natural systems, Indian peoples created niches for *homo sapiens sapiens*. As gatherers, for instance, Indian peoples almost certainly learned how to encourage the growth of some

⁴⁶ See Doerner, "Late Quaternary Prehistoric Environments of the Colorado Front Range"; Reed and Metcalf, *Colorado Prehistory*, 22, 32, 89, 96.

⁴⁷ See, for example, Ray A. Williamson, *Living the Sky: The Cosmos of the American Indian* (Boston: Houghton Mifflin, 1984); Ray A. Williamson and Claire R. Farrer, eds., *Earth and Sky: Visions of the Cosmos in Native American Folklore* (Albuquerque: University of New Mexico Press, 1992); and George E. Lankford, *Reachable Stars: Patterns in the Ethnoastronomy of Eastern North America* (Tuscaloosa, Ala.: University of Alabama Press, 2007).

⁴⁸ Robert Brunswig, Sally McBeth, and Louise Elinoff, "Re-Enfranchising Native Peoples in the Southern Rocky Mountains: Integrated Contributions of Archaeological and Ethnographic Studies on Federal Lands," in *Post-Colonial Perspectives on Archaeology*, ed. Peter Bikoulis, D. Lacroix, and M. Pueramaki-Brown (Calgary, Alb.: Chacmool Archaeological Association, 2009), 55-69.

plants, thus shifting the composition of vegetative communities.⁴⁹ Fire may occasionally have played a minor role in these efforts; most historic Indian peoples well understood that berries, to give just one example, flourished in areas that had recently burned. Yet because the hunters of the Kawuneeche evidently focused primarily on the tundra and into the alpine-subalpine ecotone below, setting fires offered them little to no benefit. Torching forests did not improve their ability to see or stalk game in the krumholtz or tundra above. More importantly, subalpine forests have long burned in incredibly hot and destructive fires that often covered hundreds of thousands of acres and initiated the total replacement of standing forests, unlike those other American ecosystems in which wildland fire produced “edge effects” that encouraged the proliferation of forest-grassland ecotones offering rich habitat for deer and other ungulates. Moreover, fire ecologists believe that in most parts of RMNP, fuel moisture has always served as the limiting factor in wildland fire; native peoples could endeavor to light the Kawuneeche’s forests, in other words, but whether or not vegetation and duff were dry enough to burn to any considerable extent depended on climatic variations that were well beyond human control.⁵⁰

⁴⁹ For a recent compendium of research on the transition from gathering to agriculture across the globe, see *Current Anthropology* vol. 50, no. 5 (Oct., 2009). On California, see Kat Anderson, *Tending the Wild: Native American Knowledge and the Management of California’s Natural Resources* (Berkeley and Los Angeles: University of California Press, 2005).

⁵⁰ On edge effects of fire as a boon to Indian hunters, see Stephen J. Pyne, *Fire in America: A Cultural History of Wildland and Rural Fire* (1982; Seattle: University of Washington Press, 1997), 75. Though Pyne begins his chapter on “Fire and the American Indian” with a string of generalizations regarding the ubiquitous significance of fire to Indian peoples, he later qualifies his argument, calling the “mosaic of anthropogenic fire regimes ... as complex as the historical geography of the cultures themselves.” *Ibid.*, 78. For a persuasive compendium by a leading fire ecologist who argues that “At higher elevations and away from heavy use areas and travel routes, evidence suggests little burning by Indians, partly because these areas are typically too moist to burn except during drought.” William L. Baker, *Fire Ecology in Rocky Mountain Landscapes* (Washington, D.C.: Island Press, 2009), 365. Even in RMNP’s lodgepole forests, fire historians have found that “surface fires had little or no thinning effect on tree densities.” Jason S. Sibold, Thomas T. Veblen, Kathryn Chipko, Lauren Lawson, Emily Mathis, Jared Scott, “Influences of Secondary Disturbances on Lodgepole Pine Stand Development in Rocky Mountain National Park,” *Ecological Applications* 17 (2007), 1638-1655. See also Jason Sibold, interview with author, Nov. 22, 2010, transcript at conclusion of this report, interview on file at RMNP Archives.

Available evidence demonstrates that throughout the Paleoindian and Archaic periods, the peoples of the Kawuneeche neither cultivated the land nor used fire to manage it. Even though native peoples did not intensively manipulate the valley's ecosystems, though, they did restructure food chains in the Kawuneeche, with important consequences for a number of other organisms. The Kawuneeche's black bears, grizzly bears, and mountain lions may occasionally have killed and even eaten native peoples in the valley; these occasional exceptions aside, human beings became the valley's apex predators. In the course of several hundred generations of seasonally inhabiting the Kawuneeche, native peoples seem never to have overexploited the valley's beaver populations; their impacts on the hydrology of the Colorado River Basin consequently remained very localized and ephemeral, constrained to the occasional consequences of killing scattered beaver for food and fur.⁵¹ The same cannot be said for ungulate populations, for which human hunters constituted an important source of predation and dispersal. A long-running and still unresolved scholarly debate has focused on the possible role of Paleoindians in the extinction of Pleistocene megafauna.⁵² If the case for early Native Americans as the key agents in the disappearance of mastodons, giant bison, giant ground sloths, and many other creatures known to have inhabited the Rocky Mountains remains uncertain, human hunters nonetheless played an unquestionable role in limiting populations and shaping

⁵¹ David Cooper, personal communication in author's possession, May 19, 2011.

⁵² This literature is too voluminous to cite here; for a few recent interventions, see William J. Ripple and Blaire Van Valkenburgh, "Linking Top-down Forces to the Pleistocene Megafaunal Extinctions," *BioScience* 60 (July 2010); Jeffrey V. Yule, Christopher X.J. Jensen, Aby Joseph, and Jimmie Goode, "The Puzzle of North America's Late Pleistocene Megafaunal Extinction patterns: Test of New Explanation Yields Unexpected Results," *Ecological Modelling* 220 (2009), 533-544; Eric Scott, "Extinctions, Scenarios, and Assumptions: Changes in Latest Pleistocene Large Herbivore Abundance and Distribution in Western North America," *Quaternary International* 217 (April 15, 2010), 225-239. For works by historians critical of Paul Martin's so-called "overkill" hypothesis, see Shepard Krech III, *The Ecological Indian: Myth and History* (New York: Norton, 1999) and Kevin James Francis, "'Death Enveloped All Nature in a Shroud': The Extinction of Pleistocene Mammals and the Persistence of Scientific Generalists" (Ph.D. diss., University of Minnesota, 2002).

behavior among elk, bison, bighorn sheep, deer, and other favored quarry. Humans and other predators presumably would have culled the old, weak, and sick, unwittingly keeping herds of large herbivores vigorous and in a rough equilibrium with available plant foods while also insuring that ungulates avoided congregating in large numbers in places such as low-lying meadows where predators had particular advantages.⁵³

Indian hunting, like predation by non-human predators, may well have served valuable ecological functions. Archaeological interpretations of game drives, however, also points to other possibilities. Mark Stiger proposes that hunter-gatherers of the Colorado high country may have used such drives for “bulk procurement.” Game drives required considerable social organization, and they potentially yielded large quantities of meat. Ancient hunters of the Colorado high country may have driven game not annually, but irregularly, killing entire herds of ungulates as “a way of funding large, temporary human gatherings held for the purpose of exchanging information about over-wintering resources.” Stiger implies that Mountain Tradition groups may have heavily exploited the herds of one area, then moved to other sites until game populations recovered.⁵⁴ As Stiger’s hypothesis illustrates, scholars still know very little about how native peoples exploited game resources in the Kawuneeche across time: While it may seem reasonable to assume that hunter-gatherers sought to maximize the sustainability of hunting in the valley from year to year, it is also very possible that they exploited the Kawuneeche’s

⁵³ Such is the assumption of virtually all ecologists who have attempted to reconstruct elk population dynamics in RMNP in the last several decades. See, for instance, United States Department of the Interior, National Park Service, *Elk and Vegetation Management Plan - Rocky Mountain National Park, CO* (Washington, D.C.: G.P.O., 2007), 7-8.

⁵⁴ Stiger, *Hunter-Gatherer Archaeology*, 164-167. Stiger also suggests that game drives “were more common during periods of environmental degradation” [167]. The location of many RMNP drives at sites near the heads of multiple valleys, however, may have made it possible for practitioners of the Mountain Tradition to use a single drive complex to exploit animals drawn from multiple herds.

herds as part of a strategy of serial migration in which they took large numbers of game from a succession of high-mountain drive complexes over the course of a multi-year cycle.

Whatever the case, Paleoindian and Archaic peoples clearly acted upon and changed their environments—by killing animals, harvesting plant foods, procuring firewood, building camps, making and using trails, engaging in trade with other peoples, enlisting sacred powers, and pursuing a range of other activities. Yet with the notable exception of the impact of human hunting on ungulate populations, the scale and rate of the changes native peoples initiated, probably remained local, transitory, and diffuse. Humans occupied the valley for only part of the year, almost always in bands that were quite limited in size. During their seasonal inhabitation of the Kawuneeche, they used a set of tools and practices that persisted more or less unchanged for many millennia, and that still remained important even as Colorado’s peoples adopted bows and arrows, ceramics, and other new technologies that began to arrive around two thousand years ago. Virtually all production was devoted to satisfying the basic needs of small populations. Accumulation and exchange remained sharply limited among the pedestrian nomads of the Rockies and Plains, though preservation and storage were important components of Indian procurement strategies, particularly amidst the plenty of summer and early fall.

The Kawuneeche as Ute Homeland and Borderland

For roughly the first nine millennia of the archaeological record in Colorado, sites throughout the state generally contain more or less comparable features. As the Late Archaic ended around 150 CE (Current Era, equivalent to AD), however, “diverse regional responses to cultural developments” began to sprout up like so many mushrooms.⁵⁵ The most notable of these

⁵⁵ Brunswig, *Prehistoric, Protohistoric, and Early Historic Native American Archaeology of Rocky Mountain National Park*, 83.

“responses” stemmed from the introduction of maize-centered agriculture. By the early centuries of the Christian calendar, corn had taken hold in the Ancestral Puebloan societies of Southwestern Colorado; and by roughly 900-1000 CE, Plains Woodland peoples on the Central Plains were also adopting maize.⁵⁶

Profound changes in native lifeways outside the Kawuneeche had complex implications for the peoples who inhabited the valley. As horticultural and agricultural peoples devised new ways of making a living on the plains and plateaus, the older lifeways of the Mountain Tradition remained as viable as ever in large swaths of Colorado’s high country. Given the impossibility of adapting maize or other cultigens to the short growing season characteristic of the Rocky Mountain uplands, alpine and subalpine hunting and gathering territories continued to provide the main sources of sustenance for native peoples of the mountains.⁵⁷ During this era (known by most archaeologists as the Formative or Ceramic period), the Kawuneeche remained an ideal locale for hunting and gathering activities that extended from riparian woodlands to the tundra above. Native peoples may have shifted more of their time and energy away from the high mountains and toward the lower-elevation areas of subalpine forest and meadow. During the Formative, the provenance of the lithic materials used by inhabitants of what is now RMNP to

⁵⁶ Reed and Metcalf claim that “By 400 B.C. cultigens were present in the region,” though they do not specify when, where, or what crops they are referring to. Reed and Metcalf, *Colorado Prehistory*, 142. Cassells claims that “the Anasazi Basketmaker farming culture” arrived on the Colorado Plateau “perhaps 500 B.C.,” though he notes that both migration and diffusion have been posited to explain this evidence. E. Steve Cassells, *Archaeology of Colorado* rev. ed. (Boulder: Johnson Books, 1997), 145, 192. Cassells notes that within the present-day borders of Colorado, “the cultivation of corn may have begun toward the end of the Late Archaic period,” meaning “that Woodland people of Colorado would have been [little] more than incipient horticulturalists with a thin veneer of farming over their substantial hunting and gathering base” [195]. To the east, though, in present-day Kansas and Nebraska, horticulture took hold earlier and more powerfully, eventually giving rise to the Upper Republican Phase of the Central Plains Tradition” [212-213].

⁵⁷ Grand County averages a 50-day growing season. See fig. 2-4 in Reed and Metcalf, *Colorado Prehistory*, 17. Most growing seasons in the Kawuneeche are even shorter, since this figure represents a countywide average. South Americans developed potato, quinoa, and other effective high-altitude crops, but there is no record of agriculture in North America at or above the elevations characterizing the Kawuneeche.

make projectile points and other tools also became progressively less local.⁵⁸ “The implication,” concludes Brunswig, “appears to be that travel (or at least preferred lithic tool sources) to and from the Park was wider ranging, and possibly, more multi-directional, than in earlier periods.”⁵⁹

There are other signs, too, of intensified movement and exchange. Pottery of Anasazi, Fremont, and Upper Republican origin seems to show that the native peoples of the Park region participated actively in trade networks that stretched to the Colorado Plateau and the High Plains.⁶⁰ Archaeologists working within RMNP have noted the presence of ceramics associated with the so-called Dismal River people, Apachean vanguards of the great migrations that would bring Athapaskan-speaking Apaches and Navajos to the southern plains and Southwestern plateaus.⁶¹ As Apachean peoples “settled into strong inter-cultural relationships” with Puebloans centered upon “periodic trade of plains products (such as buffalo hides and meat) for agricultural products (corn, beans, squash, cotton cloth),” the Apacheans began to borrow “elements of Puebloan culture.” Notable among these elements was a pottery style known as Ocate Micaceous, “whose traits reflect various blends of northern Apachean (Dismal River) and southern (Puebloan) influence.” Roughly dated to 1550-1750 CE, this style reflects both the importance of Athapaskan migrations in reshaping the cultural landscapes of the western United States, and the growing integration of the Utes into broader exchange networks that connected

⁵⁸ Though native peoples in the Kawuneeche continued to draw upon a range of resources, the representation of artifacts from alpine and alpine-subalpine ecotone regions declined during the Middle and Late Ceramic periods (roughly 1100 to 1550 CE), reaching levels not seen since glaciers blocked much of the high country during Clovis times. Brunswig, *Prehistoric, Protohistoric, and Early Historic Native American Archaeology of Rocky Mountain National Park*, 124.

⁵⁹ *Ibid.*, 125. Brunswig’s findings also seem to be consistent with Stiger’s notion that “The last 1,400 to 1,500 years in the region from Rocky Mountain National Park to the southwest corner of the state show hunter-gatherers stressed and turning to farming or corroboree hunting.” Stiger, *Hunter-Gatherer Archaeology of the Colorado High Country*, 172.

⁶⁰ Brunswig, *Prehistoric, Protohistoric, and Early Historic Native American Archaeology of Rocky Mountain National Park*, 125-128.

⁶¹ Brunswig notes that all four Dismal River sites located within the park are located “on, or near, important trail and pass corridors.” *Ibid.*, 208.

the Plains and Southwest to the Rocky Mountains.⁶² A third discovery in RMNP archaeological sites--carved soapstone or steatite vessels associated with the Intermountain Tradition, “prehistoric Shosonean material cultural items” that generally date to 1000-1800 CE—offers further evidence of intensified exchange and migration during the late pre-contact and early contact periods.⁶³

Objects commonly attributed to the Utes, however, dominate the archaeological record of central and western Colorado from around 1000 CE through the mid-1800s CE.⁶⁴ When and whence descendants of the Nuche first arrived in the Kawuneeche remains contentious. A host of uncertainties cloud the origins and migration of this loosely organized, poorly understood group of peoples. A long-held scholarly orthodoxy holds that the Nuche arrived in Colorado relatively recently, between 1000 and 1400 CE. This interpretation casts the Utes as relatively newcomers to the Rockies—indeed, they may have preceded the Spaniards into the region by little more than a century—but this hypothesis rests on a number of questionable assumptions and inferences (see Appendix 1, “On ‘Numic Spread’”). Rather than the product of relatively recent migrations to Colorado, the Nuche also may have emerged *in situ*—as, in other words, the biological descendants of earlier inhabitants of the region who adopted pottery and other cultural innovations by the second millennium sufficient to distinguish Ute archaeological sites from earlier sites. A third possibility—that the peoples known as Utes comprise the product of a blend of migration and *in situ* development—is probably the most likely of all. The debate rages on, and shows little signs of abating. Wherever the truth lay, no serious scholar denies that by 1400 AD *at the very latest*, Utes constituted the primary indigenous inhabitants and stewards of what

⁶² Ibid., 224-225.

⁶³ Ibid., 226-227.

⁶⁴ Ibid., 129-134.

is now the west side of RMNP. The Kawuneeche would remain a Nuche homeland until Americans solidified their conquest of the southern Rockies in 1880.

As we will see, the Nuche pursued many of the same basic patterns of life that their Mountain Tradition precursors had pioneered. From the 1600s onward, the Nuche also confronted Euroamerican colonialism, which presented a series of opportunities and problems altogether unlike any the Nuche's predecessors had ever experienced.⁶⁶ Spanish *entradas* into New Mexico, followed by subsequent incursions by France and the United States, slowly but surely incorporated the Ute country into global exchange networks and brought new organisms, goods, institutions, and ideas into the region, and eventually new peoples, to.

The Utes wrestled first with the arrival of scattered Spanish expeditions. Next, they confronted Comanches, Cheyennes, Arapahos, and other Indian societies experiencing profound material and cultural revolutions as a result of epidemic disease, the rise of equestrianism, the elaboration of new trade networks, and the intensification of captive-taking, warfare, and other forms of conflict. Finally, they faced the greatest threat yet, an extensive invasion by polyglot fur seekers that paved the way for a massive invasion of gold-hungry Americans. Any effort to understand the environmental history of the Kawuneeche must reckon with the Nuche, a dynamic people who made an indelible imprint on the valley's ecosystems and pathways, and whose dispossession initiated extensive ecological change in the Kawuneeche and neighboring areas.

⁶⁶ Like other historians, I employ Euroamerican as a catch-all that subsumes European colonial powers, creolized offshoots of these powers such as backwoods and backcountry societies, and the two major independent republics forged in late eighteenth and early nineteenth century North America: the United States and Mexico.

However long Ute peoples inhabited the Kawueenche, ambiguity concerning Nuche origins and migrations ultimately attests to basic continuities in the native lifeways of the RMNP region. Sherds of so-called Uncompahgre Brownware vessels found in the Park constitute culturally diagnostic markers that establish the *latest* possible arrival of Utes in present-day Rocky Mountain National Park at roughly 1400 CE.⁶⁷ Other than fragments from these pottery vessels or materials yielding radiocarbon dates during the era of presumed Ute inhabitation, Nuche artifacts remain difficult to distinguish from those created by the earlier practitioners of the Mountain Tradition, leading archaeologist Alan Reed to argue “that there is sufficient continuity in material culture and lifeways between Ute and Archaic stage components to posit in situ development” of the Nuche in the Rocky Mountain region.⁶⁸ The Utes, in other words, are almost certainly the cultural descendants of the native peoples who preceded them in the Colorado Rockies; they may also be the biological or genetic descendants of Mountain Tradition peoples.

The various peoples who would become known as Utes, wherever and whenever they came from, were spread over a vast territory. During the contact era, Nuche homelands encompassed most of Colorado from the Front Range westward, parts of northern New Mexico, and most of modern-day Utah (a state whose name embodies an Anglicization of the Spanish

⁶⁷ Brunswig, *Prehistoric, Protohistoric, and Early Historic Native American Archaeology of Rocky Mountain National Park*, 88.

⁶⁸ Alan D. Reed, “Ute Cultural Chronology,” in *Archaeology of the Eastern Ute: A Symposium*, ed. Paul R. Nickens, Colorado Council of Professional Archaeologists Occasional Papers No. 1 ([Denver]: Colorado Council of Professional Archaeologists, 1988), 80. Reed provides a useful discussion of the “theoretical and practical problems” that bedevil those trying to understand Ute origins. Since many scholars, for instance, believe that Utes, Southern Paiutes, and Shoshones were not well differentiated prior to the arrival of the horse, “the question arises: ‘Is it tenable to even assert that there is such a thing as “Ute prehistory”?’ Perhaps not.” *Ibid.*, 80. Interestingly, archaeologists generally assume that artifacts found in the northern Colorado River Basin dating “to the late eighteenth century and later are widely regarded as Ute.” Reed and Metcalf, *Colorado Prehistory*, 146.

name for the Nuche, *Yutas*).⁶⁹ Varied as these Nuche homelands were, none of them could support even a brief encampment by the entire population of Ute speakers. In fact, there is little probability that even a single division or “tribe” of the Utes ever found themselves in a single location at any point in their pre-reservation history.

Prior to European contact, the Utes, like most Indian peoples west of the Mississippi, lacked any sort of overarching national political structure. Colonialism would eventually reconfigure power in the Nuche world; even in the 1800s, though, leadership among the Utes remained fluid and constrained by function. Different headmen, for instance, assumed responsibility for distinct ceremonies, raiding expeditions, and peace negotiations. Even within the band or tribe, leaders could not exercise coercive authority. Decisions required consensus, and those who continued to dissent were rarely bound by the policies to which others had assented.⁷⁰

The fundamental unit of Ute society from their emergence in Colorado through the mid-1800s, and indeed the only unit that ever had much cohesion, seems to have been the extended

⁶⁹ Revealingly, Euroamericans only slowly came to grasp the full extent of Ute territories. As late as the 1860s, an Hispano *nuevomexicano*, Antonio Jose Martinez, told U.S. officials that the Ute lands barely extended beyond New Mexico. See “Reply of Antonio José Martinez,” July 26, 1865, in Appendix, *Condition of the Indian Tribes: Report of the Joint Special Committee Appointed Under the Resolution of March 3, 1865* (Washington, D.C.: G.P.O, 1867), 39th Cong., 2d Sess., Senate Report No. 156, 486-87.

⁷⁰ For more on Ute social and political structure, see Donald Callaway, Joel Janetski, and Omer C. Stewart, “Ute,” in *Handbook of North American Indians*, vol. 11, *Great Basin*, ed. Warren L. D’Azevedo (Washington, DC: Smithsonian Institution, 1986), 336-367; Julian H. Steward, *Ute Indians I: Aboriginal and Historical Groups of the Ute Indians of Utah: An Analysis with Supplement* (New York: Garland, 1974), 29; Thomas G. Andrews, “Tata Atanasio’s Unlikely Tale of Utes, Nuevomexicanos, and the Settling of Colorado’s San Luis Valley and the Settling of Colorado’s San Luis Valley,” *New Mexico Historical Review* 75 (2000), 21-23; Powell emphasized the importance of band structure, too, but he was also writing at a time when the effects of Spanish, Mexican, and particularly American colonialism had increased the authority of “government chiefs.” “Report on the Indians of Numic Stock,” in *Anthropology of the Numa: John Wesley Powell’s Manuscripts on the Numic Peoples of Western North America 1868-1880*, ed. Don D. Fowler and Catherine S. Fowler (Washington, D.C.: Smithsonian Institution Press, 1971), 37-38. See also Marvin K. Opler, “The Southern Utes of Colorado,” in Ralph Linton, ed., *Acculturation in Seven American Indian Tribes* (New York: Appleton Century, 1940), 119-207.

family group. “Villages,” anthropologist Julian Steward explained, comprised “loose aggregates of families, while larger multi-village groupings lacked sufficient common interests to require definitive organization.” Family groups, Steward argued, lacked “genuine political integration in native times.”⁷¹ Family groups presumably aggregated into bands during summer, when food was relatively abundant.⁷² There is no evidence that either bands or family groups ever possessed clearly defined, exclusive rights to separate territories. Indeed, the ability of Ute groups to exploit lands customarily used by other Utes without trouble comprised a critical marker of a larger Ute identity, together with a common language, extensive kinships ties across bands, shared systems of religious belief and ceremony, and, from the late seventeenth century onward, the pursuit of equestrian lifeways.⁷³

⁷¹ Steward, *Ute Indians I*, 7. It is important to note that in this source, Steward essentially sought to undermine Ute land claims. Politics shaped his study, but he nonetheless accurately captured some important features of Ute social organization and territoriality.

⁷² Ute bands may date to pre-equestrian times, although this is uncertain. Callaway, Janetski, and Stewart, “Ute,” 353.

⁷³ Steward, *Ute Indians I*, 10. On the significance of mythology as a cultural unifier, see Anne M. Smith, *Ethnography of the Northern Ute* (Santa Fe: Museum of New Mexico, 1974), 19. Powell presented rather a different view: “The whole of the region of country occupied by these tribes numbering two or three hundred [meaning the entire Numic expanse], is divided into districts with lines separating them, well defined, usually by natural objects and to each of such districts there belongs a tribe of Indians who take the name of the land and the Indians are fixed to this land. If they cultivate the soil it must be in this district; they must hunt in this district; they must gather roots and seeds and nuts in this district. To go elsewhere to obtain a subsistence they must join and become recognized as a member of another tribe.” “Report on the Indians of Numic Stock,” 38. Powell seems to have recognized the importance of divisions between different Numic “nations,” particularly the Ute-Southern Paiute divide; less applicable to the northeastern fringe of the Ute homelands, however, is his apparent implication that different tribes, divisions, or bands within the Utes proper would have possessed distinct and exclusive territories. Utes occasionally extended the prerogative of shared territoriality to allies such as the Jicarilla Apaches or Shoshones, but not to enemies such as the Arapahos or Cheyennes. Workers of the Writers Program of the Works Progress Administration of the State of New Mexico, *New Mexico: The Colorful State* (New York: Hastings House, 1940), 57; Andrews, “Tata Atanasio Trujillo’s Unlikely Tale of Utes, Nuevomexicanos, and the Settling of Colorado’s San Luis Valley,” 24. My treatment of Nuche territory runs counter to some recent interpretations of American Indian ethnogeography. As Juliana Barr notes, “For many [Indian peoples], bounded landscapes defined their locales, and people of only one group used a specific spatial domain. For others,” however, “territorial sharing proved the customary practice, even as they maintained distinct cultures, languages, and sociopolitical structures. In these shared lands, defending social and economic boundaries was the essence of territorial integrity, and groups respected existing borders as they moved through the landscape.” Ute territoriality more closely resembled the

Only some family groups (most all of them likely from “bands” or “tribes,” the membership, names, and territories of which clearly changed over time, variously referred to in historical records as the Yampas or Yamparikas, Tabeguaches, Uncompahgres, Parianuches, Sabaguanas, Grand Rivers, and White Rivers) would ever have set foot in the Kawuneeche, and then probably only in the warmer seasons of some years.⁷⁵ The Utes, like many of their Mountain Tradition predecessors, generally practiced an up-down transhumance pattern.⁷⁶ They probably did so within rough latitudinal bands; at the very least, there is little reason to believe that members of southerly Ute bands such as the Capote or Mouache would have ventured as far north as the Kawuneeche very frequently; nor is there any evidence that Utes from what is now Utah would have traveled so far away from their core domains, particularly prior to the Nuche acquisition of horses in the 1600s.

latter case. Juliana Barr, “Geographies of Power: Mapping Indian Borders in the ‘Borderlands’ of the Early Southwest,” *The William and Mary Quarterly*, 68 (Jan., 2011), 10.

⁷⁵ On the presence of Yampa or Yamparika Utes in the Kawuneeche, see Sally McBeth, *Native American Oral History and Cultural Interpretation in Rocky Mountain National Park* (Greeley, Colo.: University of Northern Colorado, 2007), 25; on Uncompahgres, Yampa, and Grand, see Brett, “Ethnographic Assessment and Documentation of Rocky Mountain National Park,” 11, 40. For larger discussions of Ute bands and locations, see Virginia McConnell Simmons, *The Ute Indians of Utah, Colorado, and New Mexico* (Niwot, Colo.: University Press of Colorado, 2000), 15-23 and Callaway, Janetski, and Stewart, “Ute,” 336-340. Confusion over Nuche bands—their size, favored locations, and so forth—has been a common feature of Ute studies since the nineteenth century. Hubert Howe Bancroft, for instance, declared that the Utes were “divided into several tribes, the number varying with different authorities.” He then went on to relate in detail the various discussions of Ute tribes or bands that he found in his team’s extensive research in Spanish, Mexican, and American sources. Bancroft, *Native Races*, vol. 1, *Wild Tribes* (San Francisco: A. L. Bancroft & Co., 1883), 463-465 (quote on 463). For a later but still problematic treatment of Ute bands and territories, see Steward, *Ute Indians I*. Steward himself frequently qualified his assertions: his study, he admitted, was “simply a ‘best guess,’ which might be considerably altered if some adequate contemporary description were brought to light” (19). The Weminuche are known to have inhabited the northern Colorado River Basin, but they probably would not have ventured as far north as the Kawuneeche, at least not often or in large numbers. Reed and Metcalf, *Colorado Prehistory*, 161.

⁷⁶ “Basic patterns of movement across annual territories,” Reed and Metcalf argue of this period, “are thought to have been generally similar to those characterizing the Archaic era, given the nature of the region’s topography.” These authors also argue that the Utes were probably more mobile than their Archaic predecessors—or at least such is the implication of the shift away from pit- and masonry-style structures to the more temporary and mobile housing types noted here. *Ibid.*, 153-4 (quoted).

While different family groups within the northeastern Nuche bands or tribes presumably pursued somewhat different patterns of seasonal movement from year to year, it seems very likely that the annual migrations of some Ute families originated in winter camps in Middle Park and points west. With the arrival of spring, celebrated by the Utes with the Bear Dance, the most important religious observance of the year, these families prepared to leave the sheltered valleys of the western slope.⁷⁷ In late spring or early summer, they traveled up the Colorado River Valley and into the Kawuneeche. From summer until some point in the fall, some Utes camped in the RMNP area, either along lower-lying rivers and creeks, or near favored high-country hunting grounds—to the Nuche as to their predecessors, the subalpine forests had little to offer. Impending signs of winter led the Utes' quarry to descend from the tundra and subalpine ecosystems to sheltered parks and valleys below; the Utes, like their Mountain Tradition predecessors, followed suit, returning west to favored camping grounds around Hot Sulphur Springs, elsewhere in Middle Park, or along the White River, the Yampa River, or other watercourses in northwestern Colorado.⁷⁸

On these migrations, the Utes followed an array of well-worn trails. These pathways, far from resembling the trails hikers and riders encounter in the Park today, were neither fixed along a single precise route, nor were they always easily followed. Instead, as park archaeologist

⁷⁷ Classic studies on the Ute bear dance include Verner Z. Reed, "The Ute Bear Dance," *American Anthropologist* 9 (July, 1896), 237-244 and Julian H. Steward, "A Uintah Ute Bear Dance, March, 1931," *American Anthropologist*, 34 (Apr. - Jun., 1932), 263-273.

⁷⁸ In 1877, to cite just one example, a Grand County settler reported in late August that "At present the Utes are not in Middle Park, but are west on Bear River, but said when they left they would soon be back again as usual in the fall." William N. Brown to General John Pope, August 30, 1877, in *Letter from the Secretary of the Interior, Transmitting . . . Correspondence Concerning the Ute Indians in Colorado*, Ex. Doc. 31, 46th Cong., 2d Sess. (Washington, D.C.: G.P.O., 1880), 117. Of the Ute fondness for Middle Park, Colorado historian Frank Hall wrote that "Prior to the invasion of the Park by white settlers, quadruped and other game abounded . . . whereby it will be readily understood that the savages were extremely averse to its abandonment. It was, in reality, the best hunting range in all the mountain region." Frank Hall, *History of the State of Colorado . . .* (Chicago: Blakely Printing Company, 1895), IV, 136.

William Baker emphasizes, “early historic trail[s], here and elsewhere, were *corridors* that provided the most direct or efficient route between two places by taking the path of least resistance.”⁷⁹ Many of the pathways Utes traversed as they moved into and out of what is now RMNP had probably been blazed by elk, mountain sheep, and other large mammals in the course of their own movements. Indians typically avoided the bottoms of valleys and parks, hewing to drier routes above the thickets of willows and other dense vegetation that typically characterized riparian corridors. In the Kawuneeche area, one important Indian trail ran between Middle Park and the Kawuneeche Valley, following the Colorado River. From this route through the valley (the Grand River Trail), three different trails headed up the west slopes of the Continental Divide, then crossed over the mountains. The southernmost of these—the Arapahos called it the Big Trail, but the Ute name for it is unknown—had two branches, one of which veered north-northeast just outside of Grand Lake, while the second comprised a cutoff route that coursed virtually due east several miles up the valley. From the junction of the two routes, Indian peoples followed Tonahutu Creek through Big Meadows and over Flattop Mountain. Near the vicinity of present-day Trail Ridge Road, a second major trail (known to the Arapahos as the Deer Trail) followed Beaver Creek to Milner Pass and connections with trails known to modern researchers as the Ute Trail, the Dog Trail, and the Cache La Poudre Trail. A third and final corridor ascended to the head of the Kawuneeche before crossing La Poudre Pass. Native American routes through the Never Summer Range remain obscure, other than the Thunder Pass-Michigan River Trail complex, which linked the head of the Kawuneeche and North Park via the Michigan River valley.⁸⁰ We know almost nothing about when, how, or by whom these trails

⁷⁹ William B. Butler, *The Historic Archaeology of Rocky Mountain National Park* (Estes Park, Colo.: U.S. National Park Service 2005), 50.

⁸⁰ *Ibid.*, 51-54. It is unclear from Butler’s map description whether the North Inlet portion of today’s Tonahutu-Flattop Mountain route was used by Indians or not.

were blazed. Some were presumably very ancient routes, and all were known not only to the Utes, but also to the Arapahos and other enemies who began to menace the Nuche frontiers during the tumultuous decades of the early 1800s.



Arapaho Indians from the Toll Expedition with Grand Lake resident Patience Cairns Kemp, 1914. These informants described the old Indian trails of the Rocky Mountain National Park area. Oliver Toll and other Anglos responsible for organizing their packtrip through the Estes Park and Grand Lake areas were particularly intent on learning Arapaho names for key landscape features as part of a larger effort to provide suitably euphonious Native American names for places trip organizers wanted to see preserved as a national park. Ramaley Collection, catalog #10-A, negative #3691, RMNP Photo collections.

Utes probably used several different kinds of shelter in the small summer camps they established in the Kawuneeche. The Utes traditionally built wickiups by binding trunks of lodgepole pine or other trees with willow striplings. They then covered the vertical supports with hides, brush, or boughs; doors of woven rushes from the Colorado River bottomlands provided access; and juniper bark (which the Nuche would have had to pack into the Kawuneeche from lower-lying woodlands in the eastern foothills or western valleys) often covered the floor, which sometimes possessed a hearth. At some unknown point in their history,

probably after acquiring the horse in the mid-seventeenth century, Utes also began to construct tipis. These were generally supported by twelve to twenty poles. The Nuche preferred lodgepole pine for this purpose, but they could make do with aspen if necessary. Instead of hauling their lodgepoles around via travois as most plains nations did, the Utes had better access to timber and could generally procure their lodgepoles on site. They covered wooden tipi frames with roughly ten buffalo hides, stitched together with sinew; if bison skins were lacking, elk hides would suffice. Inside these dwellings, Utes made beds by piling up willow branches and covering them with animal skins, preferably robes of thick, warm buffalo.⁸¹ Though the Utes ethnographer Anne Smith interviewed in the 1930s could remember the Nuche striking camps of up to twenty lodges during childhoods spent in Colorado, “the usual number,” Smith reported, “was 5 to 10”; since each inhabited by roughly five people, Smith’s figures suggest that during the mid- to late-1800s, Ute family groups typically numbered from 25 to 50 members, though summer encampments in resource-rich portions of the high country such as the Kawuneeche may have boasted as many as one hundred people.⁸²

Utes stored their possessions in and around their camps. “A typical Colorado Ute family,” Smith learned, “owned a painted parfleche and a buckskin bag for clothing, a buffalo hide parfleche for meat, two basket water jugs, a berry basket, parching tray, wood and horn cups

⁸¹ Doors were also sometimes fashioned from juniper bark, but I assume that Utes would have preferred rushes during their time in the valley, since this material was easy to procure along the Colorado. Prior to the adoption of the horse, it is unclear whether the Utes used tipis. Smith, *Ethnography of the Northern Ute*, 34-38, 42, 123. The Utes also built larger winter shelters, but not in the Kawuneeche. Presumably tipis became more common once Utes gained horses and pushed out on to the plains on seasonal buffalo hunts. Smith’s sources claimed that the Utes did not use travois, though horses would still have played a necessary role both in procuring bison hides, and in carrying the tipi covers stitched from these hides. On 1650 as a likely date of the Utes’ initial use of tipis, see Reed and Metcalf, *Colorado Prehistory*, 160. For more on wickiups, see Douglas D. Scott, “Conical Timbered Lodges in Colorado or Wickiups in the Woods,” in *Archaeology of the Eastern Ute*, ed. Nickens, 45-53. Alan Reed asserts that “with the introduction of the horse ... [Ute] groups began to use tipis.” Reed, “Ute Cultural Chronology,” 82.

⁸² Smith, *Ethnography of the Northern Ute*, 40; Reed and Metcalf, *Colorado Prehistory*, 161.

and ladles, baskets (or pots) for boiling,” as well as various tools and instruments of war.⁸³ Clubs, spears, buffalo hide shields, and arrow-equipped bows (initially made from the horns of bighorn sheep, but later fashioned from curved wood) were the most common kinds of weapons; Utes also eventually acquired rifles and other firearms, especially during the 1800s, either directly from Euro-American traders, or indirectly from other native peoples.⁸⁴ As for the Utes’ toolkit, it included scrapers and other implements used for preparing and tanning hides, digging sticks, drills for starting fires, fishing gear, and grinding stones. Prior to the arrival of Spaniards in New Mexico, the Utes possessed no utilitarian items crafted of iron or copper.⁸⁵ “Chopping down a tree,” Smith notes, “was a considerable chore. Elk horn wedges, made from the longest horn, were sharpened on a stone, [and] driven into the tree with a heavy stone to split it.”⁸⁶

The Utes typically wove baskets from squawbush, preferably gathered in spring when they believed the plant was at its most “pliable”; in a pinch, they would sometimes employ willow, which was plentiful in the Colorado River bottomlands, “for coarse work.” Utes applied pine pitch to baskets intended for carrying water.⁸⁷ By the second millennium AD, the Utes were also making the distinctive form of pottery known as Uncompahgre Brownware, several sherds of which have been found in RMNP; these consisted primarily of eight- to twelve-inch tall “jars with slightly flaring, wide necks, poorly to well-defined shoulders, and pointed to gently rounded

⁸³ Smith describes these as “possessions of a typical Colorado Ute family.” Smith, *Ethnography of the Northern Ute*, 97.

⁸⁴ *Ibid.*, 107, 109, 112-113. The Utes presumably had little access to guns in the 1600s and 1700s, since their primary Euroamerican trading partners were the Spaniards of New Mexico, who generally kept guns out of Indian hands. The Utes during this period would have had to obtain whatever guns they could largely from other Indian peoples, particularly from those groups straddling trade routes with the French, British, and, after the 1770s, the Americans, all of whom were more active in the gun trade than the Spanish.

⁸⁵ On digging sticks, see *ibid.*, 64. On lack of metal, see *ibid.*, 15.

⁸⁶ *Ibid.*, 115.

⁸⁷ *Ibid.*, 91. On pitch, see Wilson Rockwell, *The Utes: A Forgotten People* (Lake City, Colo.: Western Reflections Publishing Co., 1998), 43.

bases.” The Utes used these vessels for cooking and storage.⁸⁸ There was much more to Nuche life than mere survival, of course; Smith’s informants, for instance, told her that pets offered “a major source of entertainment for children”; birds such as “doves, owls and baby eagles,” for instance, “were kept in cages made of willow withes.”⁸⁹

For most of their history, the Utes relied chiefly upon resources available in their surroundings. Traveling in small groups and widely dispersed across the western landscape, they could satisfy their needs for shelter, weapons, tools, vessels for storage and cooking, and diversion without causing anything more than very localized impacts on the Kawuneeche.⁹⁰ Tools or weapons in hand, the Utes would venture out from camp on hunting and gathering expeditions. These expeditions, like those of earlier inhabitants of the mountains, varied greatly in extent, intensity, and duration.

All of them, though, served to fulfill the injunction of a Ute culture hero, the elder Shin-au-av brother. According to Nuche whom John Wesley Powell interviewed in the course of his pioneering explorations of the Colorado River in the late 1860s, the hero’s younger brother had proposed that “as long as [the Utes] live[d],” their food supplies “shall never fail, and thus they will be supplied with abundance of food without toil.” But the elder brother demurred, replying “Not so, ... for then will the people, idle and worthless and having no labor to perform, engage in quarrels, and fighting will ensue and they will destroy each other, and the people will be lost to the earth.” For these reasons, the elder brother decreed of the Nuche: “They must work for all they receive.”⁹¹

⁸⁸ Reed, “Ute Cultural Chronology,” 81; Reed and Metcalf, *Colorado Prehistory*, 155.

⁸⁹ Smith, *Ethnography of the Northern Ute*, 145.

⁹⁰ On the Utes’ limited capacity for storage, which implies that their activities yielded only small surpluses, see Reed and Metcalf, *Colorado Prehistory*, 154.

⁹¹ Powell, *Anthropology of the Numa*, 80. Powell reported hearing this story both on the Kaibab Plateau, and among the White Rivers in Colorado in 1868-’69. Powell repeatedly called Shin-Au-Av

So work they did. Ute women searched the landscape for telltale leaves, then used digging sticks to remove from the soil various roots--alum root (*Heuchera cylindrica*), violet (*Viola spp.*), puccoon (*Lithospermum spp.*), miner's candle (*Cryptantha sericea*), arrowleaf balsamroot (*Balsamorhiza sagittata*), bulbs and bulblets of mariposa lily (*Calochorus gunnisonii*), bistort (*Bistorta vivipara*), and other plants—as well as corms of yampa (*Perideridia gairdneri*), a foodstuff that lent its name to one northern Ute band (the Yamparika or “yampa eaters”). Utes supplemented starchy tubers with a range of leaves, seeds, berries, and fruits. The Nuche gathered many of the same plants their forebears are known to have harvested from the Kawuneeche, but they also probably introduced some innovations. The Nuche, for instance, may have collected a wider range of grass seeds than their Archaic precursors had. And unlike any of their predecessors in the RMNP region, Utes stripped pines and other trees of their outer bark, then removed and ate the tree's cambium. Finally, the Nuche, owing to a cultural prohibition against gathering wild honey, possessed a particular fondness for the sweet sap of aspen trees, which they collected in bark containers. Techniques for preserving, processing, and preparing plants used for medicine, food, or ceremonies included drying, grinding, parching, and boiling.⁹²

Hunting comprised the second major kind of food-procurement work Utes performed in the Kawuneeche. Men and older boys would sometimes seek out mule deer; Utes expressed to

“Progenitor of the Wolf nation,” but in this and some other tales he refers to the Shin-Au-Av brothers; whether singular or plural, Shin-Au-Av may correspond to the Coyote trickster so common in many Indian belief systems. Powell found the story sufficiently notable to relate it in his *Sketch of the Mythology of the North American Indians*, in Smithsonian Institution Bureau of Ethnology, *First Annual Report* (Washington, D.C.: G.P.O., 1881), 44. On a singular Nuche figure, “Seanwahv, the Creator,” see Simmons, *Ute Indians*, 1.

⁹² Brett, “Ethnographic Assessment and Documentation of Rocky Mountain National Park,” 68-71; Smith, *Ethnography of the Northern Ute*, 64-66. Simmons calls sugar “the [Ute] Indians' favorite commodity,” relating their horror when a wagon train heading for treaty negotiations in 1863 “rolled down a hillside en route, spilling a precious cargo” of sugar. Simmons, *Ute Indians*, 117. Most of the information provided here about possible plant uses in the Kawuneeche derives from interpolations of known plant distributions in RMNP and known uses of these plants by Utes in the historic period; archaeological data on plant use is largely lacking. For a list of plant foods found in sites believed to record Ute inhabitation, see Reed and Metcalf, *Colorado Prehistory*, 154.

Smith a strong preference for venison, though hunters always took care to remove a deer's eyes before bringing it into camp. Utes probably also hunted antelope, bison, and bighorn sheep in and around the valley, using surrounds, hunting blinds, and, after the adoption of the horse, mounted chases and surrounds. Utes considered grizzly bear a great delicacy; they traditionally hunted bear only in spring, though they occasionally killed the animals out of season if circumstances demanded.⁹³ White River and Uncompahgre Utes told Smith that they chiefly hunted elk in winter, when deep snow made it difficult for the ungulates to run away from hunters; it seems hard to imagine, though, that the Utes would not sometimes have sought out elk in the subalpine and tundra areas where many of the animals spent their summers. If a Ute ever encountered a moose in the Kawuneeche—a rare occurrence indeed since the only moose to inhabit the RMNP region prior to 1980 were stray individuals wandering far south of their Wyoming breeding ranges—he or she undoubtedly would have run; White River Utes, Smith claimed, “had a great fear of them. They believed that a whiff of breath wafted from the moose would cause an illness that would result in death if not promptly treated by a shaman. They also said that a moose standing in the water could trap an Indian walking along the shore by causing waves to come up and draw him into the water to drown.”⁹⁴

John Wesley Powell expressed great admiration for Ute hunters in his “Report on the Indians of Numic Stock”:

⁹³ On deer and bear, see Smith, *Ethnography of the Northern Ute*, 52. Powell reported that “the flesh of the grizzly bear is esteemed very highly, and the hunter who succeeds in killing one is considered a great hero. They are now killed by fire arms but the Indians aver that they were formerly killed with arrows, and they tell many stories of the prowess of their fore-fathers in attacking and killing these huge animals.” Powell, “Report on the Indians of Numic Stock,” 47. Some scholars speculate that pronghorn antelope may also have ventured into the Kawuneeche Valley in previous eras, though this is conjecture. Brunswig, *Prehistoric, Protohistoric, and Early Historic Native American Archaeology of Rocky Mountain National Park*, 40-41.

⁹⁴ Smith, *Ethnography of the Northern Ute*, 51. The Uintah Mountains of Utah possessed breeding moose populations, so this is likely where the Nuche developed their fear of the creatures.

The Indian as a hunter exhibits great patience and his success is due chiefly to this characteristic. He walks in a crouching attitude through the woods or over the plains with almost noiseless step. His practiced eye discovers the tracks or sees an animal at a great distance, and when the game is discovered he will walk around for a long distance to get in such a position that the deer will be to the windward. Great care is taken to crawl upon the deer so as not to frighten him, and for this purpose an Indian will often crawl upon the ground many hundred yards so managing that the little trees and bushes even, or the inequalities of the ground, will cover his approach. He never discharges his gun or shoots an arrow from a distance, but if the deer occupies some position so that he cannot get quite near enough to him without exposing himself he will lie down and gently wait until his position is changed, even though it may be necessary to wait in such a place for hours.⁹⁵

Such care probably ensured Utes ample supplies of large game during most of their annual seasonal rounds in the Kawuneeche.

True to the Utes' postulated Great Basin roots, however, they also killed a range of smaller animals. The Nuche destroyed beaver lodges, then clubbed the creatures as they scurried for cover.⁹⁶ Presumably snowshoe hares, cottontail rabbits, jackrabbits, marmots, and many other animals also found themselves on the wrong end of Ute spears, arrows, snares, and traps.⁹⁷

⁹⁵ Powell, "Report on the Indians of Numic Stock," 47-48.

⁹⁶ Smith, *Ethnography of the Northern Ute*, 57.

⁹⁷ On rabbits and hares as Ute food sources within RMNP, see Brett, "Ethnographic Assessment and Documentation of Rocky Mountain National Park," 72.

Powell portrayed the Utes he observed in Colorado and Utah as extremely efficient consumers; they took “great pains . . . to break open the bones containing marrow which is highly esteemed,” “carefully preserved” the blood of “all” game animals, and even ate animal hides “when it [wa]s not deemed desirable to preserve the skin for other purposes.”⁹⁸ Using bone and, later, steel hooks and horse-hair lines, the Nuche pulled Colorado River cutthroat trout from the Colorado River, its tributaries, and Grand Lake; on other occasions, Utes shot fish in shallow water with bows and arrows.⁹⁹ Elsewhere in the Nuche homelands, Utes ate grasshoppers, crickets, earthworms, lizards, and horned toads. The White Rivers, though, evidently possessed a band-specific cultural prohibitions against eating snakes and most insects—a reflection, perhaps, of the relative plenty they enjoyed as inhabitants of Rocky Mountain landscapes where mammals and fish provided more and probably better food with comparatively less effort than their western Ute counterparts had to expend in their struggles to eke out a living from the arid canyons, plateaus, and deserts of what is now Utah.¹⁰⁰

As the various taboos concerning deer, bear, moose, and insects all suggest, the Utes believed that their relationships with animals were not just metabolic, but imbued with sacred force. Smith learned from her Nuche informants that “various animals and birds could be

⁹⁸ Powell, “Report on Indians of Numic Stock,” 48.

⁹⁹ Utes obtained “steel fishhooks and brace bracelets” through trade with Mexicans. Smith, *Ethnography of the Northern Ute*, 61, 252.

¹⁰⁰ On prohibitions, see *ibid.*, 47. Given the scarcity of food of any sort in most parts of the Great Basin eating such animals constituted a sensible adaptation to an incredibly difficult environment. The proclivity of Great Basin Indians to eat such foods nonetheless stocked the “Digger Indian” stereotype among Anglos, in which the Nuche and their fellows seemed the epitome of Indian backwardness and benightedness. Fur-trade historian Hiram Martin Chittenden explained that the name “Root Diggers” “was an epithet derived from a manner of life, and the trappers applied to to any of those degraded peoples who dug roots for a subsistence, or depended upon other equally precarious means.” *The American Fur Trade of the Far West*, foreword by James P. Ronda, intro. Stallo Vinton (1935; repr. Lincoln: University of Nebraska Press, 1986), II: 872. For more on this stereotype, see Allan Lönnberg, “The Digger Indian Stereotype in California,” *Journal of California and Great Basin Anthropology* 3 (1981), 215-223; Peter Nabokov and Lawrence L. Loendorf, *Restoring a Presence: American Indians and Yellowstone National Park* (Norman: University of Oklahoma Press, 2004), 29.

sources of power. Buffalo, grizzly bear and mountain lion were particularly strong sources.”¹⁰¹

Along the same lines, John Wesley Powell reported:

the Nu-mas believe in an ancient race of people who were the progenitors of all human beings and also of animals, trees and even of the rocks, and they speak of an ancient people, and a species of animals, or plants in the same manner as if they were co-ordinate. So they have the nation of Nu-mas, the nation of Tai-vus, the nation of bears, the nation of rabbits, and rattlesnakes, the spiders, the pines, the sunflowers, the nation of black flints and many others.¹⁰²

Northern Ute elder Clifford Duncan put it much more bluntly: “When we say animals, we are actually talking about people also.”¹⁰³

Utes, like other native peoples, found the act of killing these other-than-human people deeply fraught with danger. Powell explained:

the Numa believes in a great number of beings whom we call demons. The air above, the earth beneath, the waters, the recesses in the rocks, the trees, everything is peopled by strange, weird beings. The *Kai-ni-suva* live in the highest mountains; they usually remain in deep chambers or underground compartments in the mountains by day, but when the storms gather over the

¹⁰¹ Smith, *Ethnography of the Northern Ute*, 155.

¹⁰² Powell, “Report on Indians of Numic Stock,” 69.

¹⁰³ Clifford Duncan, “Rabbit’s Fireball and the Creation of the Rocky Mountains and the Colorado [Grand] River,” in McBeth, *Native American Oral History and Cultural Interpretation in Rocky Mountain National Park*, 40. Anthropologist James. A. Goss claims that the Ute considered animals to be “collateral relatives.” James A. Goss, “Ute Language, Kin, Myth, and Nature: A Demonstration of a Multi-Dimensional Folk Taxonomy,” *Anthropological Linguistics* 9 (Dec., 1967), 9.

mountains they come out under cover of the clouds and ride at breakneck speed over the peaks and crags. They are supposed to have special control over mountain-sheep, elk and deer. An Indian, when he kills one of these animals, leaves some portion of the carcass where the animal has fallen to propitiate the good will of the *Kai-ni-suva*.¹⁰⁴

Having taken careful steps to thank the dead and placate the “strange, weird beings” known as *Kai-ni-suva*, the Nuche proceeded to turn flesh into food. Some items were consumed more or less immediately, in a raw state. Most others, though, required at least some processing. Utes, for instance, removed the tails from beaver and roasted them in the smoldering ashes of a fire; they placed the rest of the skinned and gutted body into boiling water.¹⁰⁵ As for deer, the Utes followed an elaborate set of procedures. They first dried muscular cuts, typically processing and storing the resulting meat alone rather than employing the common Plains Indian practice of combining it with berries to make pemmican. Fattier portions of the deer carcass were then rendered for their grease, which Utes mixed with red clay and applied to their bodies as a kind of sunscreen to protect them from the strong high-country rays. Ute women spent an average of half a day stretching a single deer hide, then several additional hours preparing and tanning it. The resulting buckskins, Smith’s informants told her with pride, “were recognized as being exceptionally well done and were frequently used as trade articles with other tribes, and with the Spanish colonists of New Mexico.”¹⁰⁶

¹⁰⁴ Powell, “Report on Indians of Numic Stock, 75.

¹⁰⁵ Smith, *Ethnography of the Northern Ute*, 49.

¹⁰⁶ *Ibid.*, 48-49, 78, 80-81 (quoted); see also Janet Lecompte, *Pueblo, Hardscrabble, Greenhorn: Society on the High Plains, 1832-1856* (Norman: University of Oklahoma Press, 1978), 160.

Utes, like their predecessors, occupied the valley in relatively small numbers, for relatively brief stretches of time, engaging in an elaborate series of activities of profound material and spiritual significance. From the 1500s onward, though, the Utes began to struggle with daunting challenges as powerful new peoples began to penetrate the peripheries of the Nuche homelands. Spanish conquistadors first approached the Ute country via Francisco Vásquez de Coronado's expedition of 1540-'42. Coronado's massive party cut swaths of ruin and rapine to the edge of the Grand Canyon of the Colorado, far onto the buffalo plains of what is now southwestern Kansas, and up the Rio Grande Valley as far north as Taos Pueblo. Coronado's disastrous *entrada* made it abundantly clear that the landscapes and peoples of southwestern North America would hardly offer up the extraordinary riches that the Aztec and Inca empires had.¹⁰⁷ Indeed, it took nearly six decades for direct colonization to begin.¹⁰⁸ Only in the spring of 1598 would a force led by Don Juan de Oñate, the Zacatecan-born scion of a wealthy aristocratic family, establish the new Spanish realm of Nuevo Mejiico, the heart of which lay some eight hundred miles north of Santa Bárbara, "the nearest Spanish community."¹⁰⁹ Historian David Weber recounts that Oñate's force "took possession" of the land through a formal ceremony conducted on the south side of the Rio Grande, near the present site of Ciudad Juárez, by declaring "Spanish dominion over the new land and its inhabitants, 'from the leaves of the trees in the forests to the stones and sands of the river.'"¹¹⁰ From this moment onward, Spanish armies, trade goods, technologies, and ideologies coursed northward from Mexico to the southern Rockies via the Rio Grande.

¹⁰⁷ David J. Weber, *The Spanish Frontier in North America* (New Haven, Ct.: Yale University Press, 1992), 46-48.

¹⁰⁸ A number of subsequent expeditions reached New Mexico from 1581 onward. *Ibid.*, 78-80

¹⁰⁹ *Ibid.*, 80, 81.

¹¹⁰ *Ibid.*, 77. In all, Oñate performed eight ceremonies of possession.

The yoke of Spanish colonialism initially fell most heavily upon the Pueblo peoples. De Oñate's brutal suppression of a revolt at Acoma in October, 1598, set an ominous precedent. Not only did the Spaniards kill some 500 men and 300 women and children; they also prosecuted for murder the roughly 80 men and 500 women and children taken captive during the fighting. Oñate pronounced the accused guilty, personally "sentence[ing] all the captives between the ages of twelve twenty-five years of age to twenty years of personal servitude, and he condemned males older than twenty-five to have one foot severed."¹¹¹ The Nuche, safe in their Rocky Mountain and Great Basin homelands, never experienced such direct or forceful assaults at the hands of Spanish colonists. Euroamerican colonialism arrived in the Kawuneeche much more gradually, but with profound consequences nonetheless.

The Spanish, like all Europeans, advanced their colonial projects via human explorers, soldiers, priests, and settlers. Together, these peoples wielded a range of powerful technologies: metal weaponry, gunpowder, written systems of communication, and highly developed state structures. No more than 3,000 colonists resided in New Mexico at any point in the 1600s, but they exerted an outsized influence on social and environmental relationships throughout the region. Other organisms that accompanied the Spanish in their efforts to build a new Mexico along the Rio Grande, though, substantially magnified the environmental, social, and political impacts these newcomers could unleash.¹¹²

Alfred Crosby and a host of other environmental historians have demonstrated the workings of "ecological imperialism," a series of processes by which plants, animals, and micro-organisms from the Old World facilitated the demographic takeover of temperate zones in

¹¹¹ Ibid., 86.

¹¹² Ibid., 90.

Africa, Oceania, and the Americas by peoples of European descent.¹¹³ James Merrill, Colin Calloway, and other scholars of native-newcomer interactions in American colonies, meanwhile, have emphasized the ways in which the arrival from the so-called Old World of trade, disease, and plants and animals produced changes so sweeping and so rapid that American Indians effectively encountered a world every bit as “new” to them as it was to incoming Europeans.¹¹⁴ Unlike those native peoples inhabiting the beachheads of Euroamerican colonialism, however, the Utes initially experienced these transformations in greatly attenuated form. The Ute world would change substantially between the 1500s and the early 1800s, but the Kawuneeche region probably continued to strike most Indians as much more “old” than “new” throughout this era.¹¹⁵

The Spaniards’ intentional allies included horses, pigs, cattle, sheep, and war dogs; Spanish imperialists usually benefited at least as much from the armies of microbes that human invaders unwittingly unleashed on native peoples. Indeed, Weber notes the irony that “disease, the least visible trans-Atlantic baggage, was Spain’s most important weapon in the conquest of America.”¹¹⁶ Native Americans lacked acquired immunity to influenza, measles, smallpox, and several other virulent diseases that had co-evolved with Old World peoples.¹¹⁷ Smallpox hit the

¹¹³ Alfred W. Crosby, *Ecological Imperialism: The Biological Expansion of Europe, 900-1800* (New York: Cambridge University Press, 1986).

¹¹⁴ James H. Merrill, *The Indians’ New World: Catawbas and Their Neighbors from European Contact through the Era of Removal* (New York: Norton, 1991); Colin G. Calloway, *New Worlds for All: Indians, Europeans, and the Remaking of Early America* (Baltimore: Johns Hopkins University Press, 1998).

¹¹⁵ Neal Salisbury suggests that the Utes were hardly alone in this regard. Neal Salisbury, “The Indians’ Old World: Native Americans and the Coming of Europeans,” *William and Mary Quarterly* 53 (1996), 435-458.

¹¹⁶ *Ibid.*, 28-29.

¹¹⁷ Such Old World microbes co-evolved with human beings under conditions in which people and domesticated animals had long crowded together in dense populations that provided ideal habitats for microbes capable of moving easily back and forth between human and animal hosts. E. Fuller Torrey and Robert H. Yolken, *Beasts of the Earth: Animals, Humans, and Disease* (New Brunswick, N.J.: Rutgers University Press, 2005), chs. 2-4. The presence of primates in the Old World also shaped the evolution of diseases such as smallpox; Charles F. Merbs, “Patterns of Health and Sickness in the Precontact Southwest,” in *Columbian Consequences*, vol. 1, *Archaeological and Historical Perspectives on the*

Pueblos by 1638; epidemic diseases joined other factors—warfare, the slave trade, malnutrition, and so forth—to reduce the Pueblos’ numbers from 60,000 to 40,000, forcing the abandonment of many villages.¹¹⁸

There is also no clear evidence, however, that the epidemic diseases that so ravaged indigenous peoples throughout the Americas afflicted the Nuche of the Kawuneeche Valley during this period.¹¹⁹ No Spaniards ever traveled to the Kawuneeche; northeastern Utes, for their part, rarely ventured to New Mexico, and had only sporadic contacts with outsiders through the early- to mid-1800s. Little archaeological evidence on the Utes in RMNP has been found for the period from the 1600s through the 1800s, but those artifacts that have been studied seem consistent with a scenario of surprising cultural continuity amongst the northeastern Nuche.¹²⁰

The single most important factor in the essential continuity of life on the Utes’ northeastern periphery during this era turns out, ironically enough, to have been an agent of far-

Spanish Borderlands West, ed. David Hurst Thomas (Washington: Smithsonian Institution Press, 1989), 51. For a helpful review of disease dynamics by a historian trained in epidemiology, see David S. Jones, “Virgin Soils Revisited,” *William and Mary Quarterly* 60 (2003), 703-740.

¹¹⁸ Colin G. Calloway, *One Vast Winter Count: The Native American West before Lewis and Clark* (Lincoln: University of Nebraska Press, 2003), 168.

¹¹⁹ Some scholars assume that the Utes experienced severe epidemics during the early colonial period, but they provide no firm evidence to support these claims. See, for example, Charles Wilkinson, *Fire on the Plateau: Conflict and Endurance in the American Southwest* (Washington, D.C.: Island Press, 1999), 128. Reed and Metcalf postulate that a reduction in the frequency of archaeological sites attributed to the Utes dating from 1650 through 1750 may reflect the impact of epidemic disease, but this hypothesis is purely speculative. *Colorado Prehistory*, 162-63. Later epidemic outbreaks are amply recorded. On the 1840s and 1850s, see David Rich Lewis, *Neither Wolf Nor Dog: American Indians, Environment, and Agrarian Change* (Lincoln: University of Nebraska Press, 1994), 36. On a smallpox epidemic in 1861-2, see Russell Thornton, *American Indian Holocaust and Survival: A Population History since 1492* (Norman: University of Oklahoma Press, 1987), 100. And on the first half of the twentieth century, when a range of maladies felled large numbers of Southern Utes and Ute Mountain Utes, see Richard K. Young, *The Ute Indians of Colorado in the Twentieth Century* (Norman: University of Oklahoma Press, 1997), 66; Richard O. Clemmer and Omer C. Stewart, “Treaties, Reservations, and Claims,” in *Handbook of North American Indians Vol. 11: Great Basin*, ed. D’Azevedo, 545.

¹²⁰ Here I demur from Callaway, Janetski, and Stewart, “Ute,” who lump all “eastern Utes” together as having been “in contact with Spaniards at least by the early 1600s” [354]. This simply is not true of the northeastern Utes, who appear very rarely in Spanish records and lived many hundreds of miles away from New Mexico along difficult, often dangerous travel routes.

reaching transformation: the horse (*Equus equus*). Southern Utes, whose territorial boundaries extended close to the Spanish settlements along the northern Rio Grande, first appear in Spanish documents in the 1620s. By 1637, “the first recorded battle” between Nuche and Spaniards occurred in the San Luis Valley, in what is now south-central Colorado. Southern Utes began to obtain horses during these early years through raids; historian Virginia McConnell Simmons dates the Utes’ initial acquisition of the horse to 1640, when Ute warriors held captive by the Spanish in Santa Fe “took their first horses, the beginning of a new era for the nomads.”¹²¹

The Utes gained secure access to the animals, though, following the Pueblo Revolt of 1680, a massive, coordinated uprising in which allied Indian forces expelled the Spanish from New Mexico for over twelve years. In the course of the revolt, the Pueblos and other Indians took Spanish horses.¹²² At least some of these horses then passed into Ute hands, presumably via established exchange networks linking the Nuche to other Indian peoples in and around New Mexico. One key trade route probably brought horses up the Rocky Mountain piedmont, and thus onto the Great Plains; a second led from the Rio Grande Valley north and west into the intermontane valleys and basins of central and western Colorado.¹²³ Horses could have reached the northeastern Utes from either direction, or from both, and they almost certainly would have

¹²¹ Simmons, *Ute Indians*, 29 (quoted); Ned Blackhawk, *Violence Over the Land: Indians and Empires in the Early American West* (Cambridge, Mass.: Harvard University Press, 2006), 30. Demetri B. Shemkin follows Jack Forbes in arguing that “Ute captives obtained knowledge of horses by 1637-1641.” “The Introduction of the Horse,” in *Handbook of North American Indians Vol. 11: Great Basin*, ed. D’Azevedo, 517. Reed and Metcalf date the rise of equestrianism among the Ute to roughly 1650 AD. *Colorado Prehistory*, 149.

¹²² Shemkin, “Introduction of the Horse,” 517; Simmons, *Ute Indians*, 30.

¹²³ Shemkin, “Introduction of the Horse,” 517-523.

done so quite rapidly. The Ute inhabitants of the Kawuneeche would almost certainly have begun to shift from pedestrian to equestrian lifeways by the late-seventeenth century.¹²⁴

Throughout the American West, the introduction of horses catalyzed revolutionary transformations. Elliott West has eloquently argued in his magisterial *Contested Plains: Indians, Goldseekers and the Rush to Colorado* that horses facilitated a kind of alchemy for the Comanches, the Lakotas, the Arapahos, the Cheyennes, the Kiowas, and other Indian peoples of the plains:

For the first time in the region's long history men and women were not limited by their own speed and endurance. Hunters on horseback could range more widely for game and could kill it more often; they could cover more ground in search of water and useful plants. The Indians' reach of trade was greatly expanded, and with horses they could also carry around more possessions, including larger lodges to contain them. Horses revolutionized warfare, as they had from their first domestication. Mounted warriors not only dominated those on foot, but far-ranging horsemen also could raid villages almost at will while remaining out of retaliation's reach. The overall effect was to increase a plainsman's realm of control over both his material world and other humans with less access to horseflesh.¹²⁵

¹²⁴ Horses reached the Comanches, who then resided in southwestern Wyoming and north-central and northwestern Colorado, by 1700. Simmons, *Ute Indians*, 31. Surely those Utes to the south and east of the Comanches would have acquired horses earlier.

¹²⁵ Elliott West, *The Contested Plains: Indians, Goldseekers, and the Rush to Colorado* (Lawrence, Kans.: University of Kansas Press, 1998), 50.

In West's interpretation, the adoption of equestrianism represented nothing less than "a leap of power far greater than any before it in plains history."¹²⁶ Horses meant "liberation. Native Americans on the plains took to the horse with a heady feeling of suddenly widening potential, and that must have brought a sense of grand destiny."¹²⁷ Once native peoples understood the possibilities unleashed by the new animals, "those people looked at the country and thought it into another shape," coming to see themselves, in the Kiowa Nobel laureate N. Scott Momaday's wonderfully concise phrasing, "as centaurs in their spirit."¹²⁸

West makes a persuasive case for the horse as a revolutionary factor in Plains Indian history. As for the Nuche, they almost certainly experienced the same feelings of "liberation" and "potential" that other Native American peoples did when they first managed to obtain and ride horses. At the same time, the Utes adopted horses in an essentially conservative manner, unlike either their rivals on the Great Plains, or two sets of neighbors and close relatives: the Eastern Shoshone (who spilled onto the plains from Wyoming north to Saskatchewan, becoming full-fledged bison specialists) and the Comanche (who broke off from the eastern Shoshone in what is now northwestern Colorado and southwestern Wyoming at the beginning of the eighteenth century, migrated to the southern plains, and became the most powerful people in the region within less than a century.¹²⁹

¹²⁶ Ibid., 51.

¹²⁷ Ibid., 54.

¹²⁸ Ibid., 54-55.

¹²⁹ The Utes' conservatism was, like most things, highly relative. Ute society, culture, and environmental relationships changed in important ways because of the acquisition of the horse, as most authorities rightly note. But when compared to the Cheyennes, the Comanches, the Lakotas, the Apaches, and most other Indian peoples of the Mountains and Plains, Ute lifeways changed much less dramatically. James F. Brooks, *Captives and Cousins: Slavery, Kinship, and Community in the Southwest Borderlands* (Chapel Hill: University of North Carolina Press, 2002), 153. For context, see Pekka Hämäläinen, "The Rise and Fall of Plains Indian Horse Cultures," *Journal of American History* 90 (2003), 833-862.

To be sure, the Utes greeted the arrival of horses to their domains with considerable enthusiasm. The Nuche eagerly incorporated the animals into their rock art during the seventeenth century; by the nineteenth century, the Utes had grown so fond of their mounts that United States officials such as the ill-fated White River Agent, Nathan Meeker, began to direct their vitriol against Nuche horses, seeing the Indians' love for the creatures as a fundamental obstacle to the government's campaign to transform these "primitive" hunter-gatherers into "civilized" American agriculturalists.¹³⁰ Horses, as they did in so many other parts of North America, helped the Nuche to embark upon far-reaching cultural, social, political, and environmental innovations. As historian David Rich Lewis explains of the Northern Utes,

Horses facilitated the accumulation of more material goods and sparked an elaboration of Ute material culture. Decorated skins replaced fiber and brush for clothing and lodgings. Horses themselves became symbols of wealth, success, and social status, thereby influencing the selection and tenure of Ute leaders. Utes expanded their territory, becoming important middlemen in the intertribal horse trade and noted raiders. They sold Goshute and Southern Paiute slaves to the Spanish and then raided Spanish trade routes and settlements. They clashed more frequently with the Cheyenne, Arapaho, Lakota, and Comanche. The horse and Plains cultural influences sparked incipient warrior societies and more formal leadership structures among some eastern Ute bands.¹³¹

¹³⁰ On rock art, see Sally J. Cole, *Legacy on Stone: Rock Art of the Colorado Plateau and Four Corners Region* (Boulder: Johnson Books, 1990), 223-252.

¹³¹ Lewis, *Neither Wolf Nor Dog*, 30-31.

Horses, as Lewis notes, enabled the Utes to carry more goods into and out of the Kawuneeche. “The White River people secured clay in trade,” Smith claimed, “from ‘the people down south,’ the Apache. They traded buffalo or elk robes for pots . . . , or bridles for Ute buckskin. . . . From the Mexicans they got steel fishhooks and brass bracelets,” and they obtained still other goods during annual visits from the Navajo.¹³² With horses, northeastern Utes had the capacity to transport (often via southern Ute trade partners) buckskins and elkskins tanned with tremendous care and skill by Ute women, bison preserved and brought back from fall hunts on the plains, captives taken among the Paiutes, Hopis, and other peoples, and a range of other goods. The Nuche used horses to freight goods between their homelands and the trade fairs and settlements of northern New Mexico, the Comanche trade centers of the plains, and, eventually, American fur-trade rendezvous and trading posts.¹³³

Horses themselves became important objects of exchange for the Nuche. Keeping the animals nourished and healthy during Colorado’s mountain winters was never easy, even in the relatively dry and protected intermountain parks. Raids by Plains Indians sometimes further depleted Ute herds. On those occasions when the Utes did possess a surplus of horses, they might trade the animals to Arapahos “for leggings and blankets decorated with beads or bands of porcupine quills.” It was just as common, though, for horse-poor boys and men among the Nuche to eschew trade with other Indians in favor of war and raiding parties whose “primary purpose,” according to Smith, “was to steal horses.”¹³⁴

¹³² Smith, *Ethnography of the Northern Ute*, 252.

¹³³ Smith’s informants told her that “Good fast horses were essential to a successful buffalo hunt and, likewise, additional horses to pack the meat home.” *Ibid.*, 54. See also Brooks, *Captives and Cousins*, 151. After the 1750s, the southern Utes began to trade extensively in Abiquiu, Ojo Caliente, and other frontier settlements populated largely by *genízaros*, detribalized Indian janissaries previously captured by the Spaniards. For more on this, see Andrews, “Tata Atanasio Trujillo’s Unlikely Tale of Utes, Nuevomexicanos, and the Settling of Colorado’s San Luis Valley.”

¹³⁴ Smith, *Ethnography of the Northern Ute*, 252, 238.

Horses not only quickened the currents of trade. The creatures also helped Utes to stretch out their seasonal transhumance rounds and turn bison taken on the Great Plains into significant sources of meat, hides, and robes. The resulting hunting expeditions, generally launched in late summer or early fall, enabled southern Ute bands to congregate in late summer and early fall in numbers that simply could not have been sustained during the pedestrian era; it seems reasonable to assume that the northeastern Utes, like their tribesmen to the south, would have begun to camp in larger groupings during this period, too, though direct evidence of such a development is lacking.¹³⁵

The embrace of horse-mounted bison hunting by northeastern Ute groups set the Nuche on a collision course with mounted native nations that were expanding onto the high plains of the Platte River watershed from the prairie-forest ecotone of the Upper Mississippi Valley (present-day Wisconsin and Minnesota), as well as from the northeastern edge of the Great Basin in southern Wyoming. At one point or another, the Nuche of what is now northern Colorado fought Cheyennes, Arapahos, Lakotas, Comanches, Kiowas, and other peoples of the buffalo hunting grounds.¹³⁶ Plains nations often retaliated by launching raiding and war parties that pushed deep into Ute country. As bison populations began a precipitous decline by the late 1840s, and as competition between Indian peoples and American newcomers intensified on the central plains, Cheyennes and Arapahos in particular intensified attacks on the Ute homelands.¹³⁷ John C. Fremont, for instance, came upon an Arapaho expedition that struck into South Park, deep within

¹³⁵ The classic interpretations of Ute equestrianism, bands, and political organization remain S. Lyman Tyler, "The Yuta Indians before 1680," *Western Humanities Review* 5 (Spring 1951): 153-163. See also Blackhawk, *Violence Over the Land*, 30-31.

¹³⁶ On these conflicts, see Blackhawk, *Violence over the Land*; and Elizabeth John, *Storms Brewed in Other Men's Worlds: The Confrontations of Indians, Spanish, and French in the Southwest, 1540-1795* (College Station: Texas A&M Press, 1975).

¹³⁷ Andrews, "Tata Atanasio Trujillo's Unlikely Tale of Utes, Nuevomexicanos, and the Settling of Colorado's San Luis Valley."

Nuche territory, in the mid-1840s.¹³⁸ A local Grand Lake legend that may have some basis in truth tells of an Arapaho assault on a Ute encampment near the lake, presumably in the mid-nineteenth century, in which a windstorm sunk the raft on which the Nuche had attempted to protect several women and children, drowning everyone aboard in the frigid waters of Colorado's deepest lake.¹³⁹ Outsiders may have invaded Ute country from the plains primarily because of the ample game populations the mountains supported; for the male warriors of the Cheyennes and Arapahos, though, fighting Utes also held the promise of glory. Colonel Richard Dodge of the U. S. Army claimed: "All the powerful plains tribes, though holding [the Utes] in contempt on the plains, have an absolute terror of them in the mountains."¹⁴⁰ That "terror" made the Utes' worthy targets, particularly for young plainsmen seeking to enhance their martial reputation. There is even evidence that after the Pike's Peak Gold Rush, the Arapaho leader Left Hand led some of his young men on raids against the Utes in an unsuccessful ploy to check the spiraling violence between his people and the Americans by redirecting his young men's wrath against the Nuche.¹⁴¹

¹³⁸ Simmons, *Ute Indians*, 29-46. Fremont wrote that the Arapahos were initially angry with the Americans for "'carrying arms and assistant' into their 'enemy's country.'" Quoted in Blackhawk, *Violence over the Land*, 181-182. Conflict with Navajos, Pueblos, and other Southwestern peoples also intensified during this era, but such struggles rarely would have involved northeastern Utes.

¹³⁹ Simmons, *Ute Indians*, 46. For an intriguing analysis of Anglo attempts to relate a mythical Ute history in Utah, see Jared Farmer, *On Zion's Mount: Mormons, Indians, and the American Landscape* (Cambridge, Mass.: Harvard University Press, 2008).

¹⁴⁰ Richard Irving Dodge, *Thirty-Three Years' Personal Experience among the Red Men of the Great West: A Popular Account of Their Religion, Habits, Traits, Exploits, etc., with Thrilling Adventures and Experiences on the Great Plains and in the Mountains of Our Wide Frontier* (Hartford, Ct.: A. D. Worthington & Co., 1882), 442.

¹⁴¹ Margaret Coel, *Chief Left Hand: Southern Arapaho* (Norman: University of Oklahoma Press, 1988), 90, 100, 131. As the Utes intensified their exploitation of bison from the plains to their east, so, too, did they seek to expand their power over Indian peoples to their south and particularly to their west. Ned Blackhawk argues: "the nonequestrian peoples of the southern Great Basin in the late 1700s began to endure the high and deadly costs of colonial expansion" as equestrian Utes became major players in burgeoning captive-exchange networks that linked the Great Basin and the Great Plains via the Spanish and Pueblo settlements of the Rio Grande. Utes possessing horses and trade ties to New Mexico "increasingly displaced the violent political economy of northern New Spain onto more distant Great

In these and other ways, the advent of equestrianism changed how the Nuche interacted with each other, other people, and the environment. As the Nuche increasingly pursued their age-old, up-down seasonal migrations not on foot, but on horseback, they had to reorient their movements around their horses' needs. For starters, the Nuche now had to locate their camps close to good pasture, something that had never before concerned them. Using estimates of horse and human populations at northern Ute agencies in the 1860s and '70s, anthropologist John Ewers ranked the Nuche as relatively wealthy in horses.¹⁴² The seasonal arrival of dozens, occasionally even hundreds of horses into the Kawuneeche, would nonetheless have subjected the grasslands of the valley bottom and subalpine meadows alike to unprecedented impacts. Large domesticated herbivores began to graze the Kawuneeche for the first time—but hardly the

Basin peoples. Utes had horses, metals, and generations of trading relations with New Mexico. More distant Great Basin peoples living in environments less suitable for equestrianism did not. They lacked not only horses but also the means to acquire them.” As a consequence, “Great Basin Indians,” Blackhawk concludes, “were incorporated into the violent orbit of Spanish colonialism, not by Spanish conquistadors or soldiers, but by Utes, whose alliance with New Mexico spread slavery into the Intermountain West.” As those Ute bands whose territories lay closest to New Mexico displaced the violence of Spanish colonialism onto horseless neighbors such as the Southern Paiute and the Western Shoshone, their northeastern Utes counterparts would have occupied an enviable position. Their domain lay safely distant from “the intense militarization and internecine warfare [which] accompanied Spanish trade goods out of” New Mexico; their possession of large horse herds made them formidable opponents for anyone seeking to enslave them; and they enjoyed relatively easy access via southern Ute intermediaries to Taos, Santa Fe, and other exchange centers where Spaniards, Indians, and others traded a wide range of goods. *Violence over the Land*, 57, 28. On captivity in the region, see Brooks, *Captives and Cousins*. On the trade alliance between Sabaguanas (also spelled Sahuahuanes) or Uncompaghres and Moaches, see Margaret M. Arnold, “Ute Trade, 1750-1821: At the Core of Economic, Political, and Cultural Change” (M.A. thesis, University of Wyoming, 1995), 22. Spanish colonial records rarely specified the band membership of Ute captives in the province, but there is little reason to believe that northeastern Utes were enslaved with any frequency.

¹⁴² The average northern Ute possessed about two horses during this period; because the Nuche by that point had experienced considerable trauma and dispossession as a result of the Colorado Gold Rush, it seems reasonable to assume that the Utes' wealth in horses would have been even greater during the eighteenth and early- to mid-nineteenth centuries. John C. Ewers, *The Horse in Blackfoot Indian Culture: With Comparative Material from Other Western Tribes* Smithsonian Institution Bureau of American Ethnology Bulletin 159 (1955; Washington, D.C.: Smithsonian Institution, 1969) 27-28.

last—with poorly understood ecological consequences.¹⁴³ At the very least, the Utes may have had to move camp more frequently to keep their horses well fed, particularly in the early summer before some grasses matured.¹⁴⁴ Horse herds also presumably compacted the soil along existing trails, as well as along a race course north of Grand Lake on which Utes, inveterate gamblers and horse-racing fans, pitted their fastest ponies against each other for high stakes.¹⁴⁵

Equestrianism and the changes it brought in its wake also affected wildlife populations. As Utes grew more reliant on plains bison, they may have taken fewer elk, deer, bighorn sheep, small mammals, and other native fauna in the Kawuneeche Valley area. At the same time, though, it was often easier to hunt large game on horseback, and Utes began to use mounted surrounds and chases against big horn sheep and other game.¹⁴⁶ The impact of growing conflict with Plains Indians on game populations in the southern Rockies is similarly unclear. As the Nuche and their Arapaho and Cheyenne enemies struggled over the northeastern Front Range, the Kawuneeche Valley may have become something of a buffer zone, a no man's land that the Nuche may have used less frequently and less intensively because of the dangers posed by plains raiders.¹⁴⁷ On the other hand, invading peoples may have been more prone to overharvesting game species than the Kawuneeche's customary residents were. Moreover, the decline of bison on the plains and the resulting competition for game that ensued may also have pressured the

¹⁴³ The classic study on the ecological effects of horses in the American West remains Joel Berger, *Wild Horses of the Great Basin: Social Competition and Population Size* (Chicago: University of Chicago Press, 1986).

¹⁴⁴ My interpretation here draws upon Pekka Hämäläinen, "The Politics of Grass: European Expansion, Ecological Change, and Indigenous Power in the Southwest Borderlands," *The William and Mary Quarterly* 67 (April 2010), 173-208; Dan Flores, "Bison Ecology and Bison Diplomacy: The Southern Plains from 1800 to 1850," *Journal of American History* 78 (Sep., 1991), 465-485; West, *Contested Plains*, 51-53; and Elliott West, *The Way to the West: Essays on the Central Plains* (Albuquerque: University of New Mexico Press, 1995), 21-36.

¹⁴⁵ Jean Miller, "Buckskin and Berries, Tipis and Tomahawks." *Grand County Historical Association Journal* special edition, "Middle Park Indians to 1881," vol. 7 (June 1987), 18.

¹⁴⁶ Smith, *Ethnography of the Northern Ute*, 55, 57.

¹⁴⁷ On the significance of buffer zones on the plains as bison refugia, see West, *Way to the West*, 61-62.

Utes to up their take of elk, bighorn sheep, trout, and other creatures from the Kawuneeche by the mid-nineteenth century at the latest.¹⁴⁸ Though the precise ecological effects of the Utes' shift to equestrianism on the Kawuneeche Valley remain murky, one thing is clear: horses and the changes they brought with them began first to stretch the fabric of the Mountain Tradition, then to tear it asunder.

Contact with the outer waves of a colonial economy centered initially in Europe, then in the eastern United States, brought far reaching changes to native inhabitants of the American West. The real trouble for the Utes, though, took a couple of centuries to arrive. When it finally burst onto the Rocky Mountain scene in the 1800s, it came garbed in one of the more unusual get-ups the region had yet witnessed. The Connecticut-born journalist and one-time fur trapper Rufus Sage memorably described the a typical fur trapper in his oft-republished 1846 travelogue, *Scenes from the Rocky Mountains*:

His dress and appearance are equally singular. His skin, from constant exposure, assumes a hue almost as dark as that of the Aborigine, and his features and physical structure attain a rough and hardy cast. His hair, through inattention, becomes long, coarse and bushy, and loosely dangles upon his shoulders. His head is surmounted by a low crowned wool-hat, or a rude substitute of his own manufacture. His clothes are of buckskin, gaily fringed at the seams with strings of the same material, cut and made in a fashion peculiar to himself and associates.

The deer and buffalo furnish him the required covering for his feet, which he

¹⁴⁸ On the subsistence crises suffered by southern Utes by the 1850s, see Andrews, "Tata Atanasio Trujillo's Unlikely Tale of Utes, Nuevomexicanos, and the Settling of Colorado's San Luis Valley."

fabricates at the impulse of want. His waist is encircled with a belt of leather, holding encased his butcher-knife and pistols—while from his neck is suspended a bullet pouch securely fastened to the belt in front, and beneath the right arm hangs a powder horn transversely from his shoulder.¹⁴⁹

Sage's *Scenes in the Rocky Mountains* joined the novels of James Fenimore Cooper, the travel narratives of Washington Irving, and the canvases of Charles Deas, George Caleb Bingham, and Alfred Jacob Miller in treating mountain men as primitive, manly, and romantic, natural nobles doomed to pave the way for American conquest before disappearing into the sunset.¹⁵⁰ Why did Sage and his contemporaries feel so confident that mountain men would not endure—that the fur trade comprised but a stage in the advance of civilization and the expansion of the American frontier? The simplest answer is that everyone who participated in or knew much at all about the fur trade grasped that American trappers and traders were agents of biological destruction. The mountain man was doomed to extinction, in short, because he was bound to drive bison, beaver, and any other creature he hunted or trapped to the brink of extinction.¹⁵¹

¹⁴⁹ Rufus Sage, *Scenes in the Rocky Mountains, and in Oregon, California, New Mexico, Texas, and the Grand Prairies; Or, Notes by the Way, During an Excursion of Three Years, with a Description of the Countries Passed Through, Including Their Geography, Geology, Resources, Present Condition, and the Different Nations Inhabiting Them, by a New Englander* (Philadelphia: Carey & Hart, 1846), 18-19.

¹⁵⁰ Significantly, Sage went on to celebrate the mountain man's "proud spirit, expanding with the intuitive knowledge of noble independence, becomes devotedly attached to those regions and habits that permit him to stalk forth, a sovereign amid nature's loveliest works." *Ibid.*, 18-19. For a classic and still useful interpretation, see William H. Goetzmann, "The Mountain Man as Jacksonian Man," *American Quarterly* 15 (1963), 402-15.

¹⁵¹ In *The Pioneers* (1823), Cooper had Natty Bumppo lament the "wasty ways" of the settlers who followed him into upstate New York. Though Bumppo's critique may have been on target regarding these pioneers' profligacy, he nonetheless overstated the restraint practiced by trappers, hunters, and traders. See Alan Taylor, "'Wasty Ways': Stories of American Settlement," *Environmental History* 3 (1998), 291-310.

Starting in the early 1800s, the Colorado Rockies witnessed an influx of trappers and traders from the east. A motley crew of French Canadians and Spanish Missourians, Scots-Irish Kentuckians and Ohioans of Puritan stock, Delaware Indians and African Americans packed traps, guns, whiskey, pemmican, and an assortment of other goods onto mules and horses in St. Louis, Santa Fe, and other outposts. They then pushed across the plains and into the Rockies. Some of these trappers ventured to Middle Park, which fast became a legendary hunting and trapping ground. By and by, a few—certainly no more than a few dozen—must have penetrated the Kawuneeche, though surviving documents on the Rocky Mountain fur trade make no clear mention of the Colorado River headwaters.

By examining the larger tempests of change that buffeted the Rocky Mountain National Park region between the 1820s, when the first trappers likely would have set foot in the area, and the 1870s, when Americans completed their conquest of the Nuche of the Kawuneeche, we can place the valley's environmental history in a broader context. The integration of the West into national and international markets for animal pelts and hides had devastating consequences for bison, beaver, and Indian peoples. The fur trade transformed social and environmental relationships in and around the Kawuneeche. By the time the quest for bison and beaver abated in the 1840s, the fur trade had changed the Colorado River's hydrology, reconfigured relationships between the Nuche and the animals on which they depended, and set the stage for the American conquest of the Rocky Mountain National Park area.

Consider first the decline of the bison and the impact of buffalo depopulation on the Indian peoples who relied upon these large grazers. As the great equestrian powers with whom the Nuche contended for Great Plains hunting grounds—the Lakotas, Comanches, Kiowas, Cheyennes, Arapahos, and so forth—became increasingly dependent on trade goods such as

guns, wool blankets, copper kettles, metal tools, beads, and alcohol, they increasingly abandoned other subsistence and market activities to specialize in hunting, processing, and trading buffalo hides and robes. Several factors—sharply escalating hunting pressure from Native American peoples (intensified by an American policy which forcibly removed populous eastern Indian nations such as the Cherokees, Shawnees, and Mesquakies to the Great Plains), competition with Indian peoples and their proliferating horse herds for critical winter shelter, drought, and possibly infections carried westward by the oxen of American emigrants—combined to cause severe contractions in the bison’s range by the 1850s. Bison disappeared from the San Luis Valley, long a favored buffalo ground of the southern Utes, and there is unequivocal evidence of severe depopulation along the Colorado piedmont and astride the great Platte and Arkansas River corridors. By the middle of the nineteenth century, the creatures probably had probably also grown scarcer in the large intermountain valleys to the north, including Middle Park. Though bison never seem to have been common in RMNP, they became exceedingly rare in the Kawuneeche from the 1850s onward.¹⁵² The Nuche certainly bore some responsibility for this disastrous turn of events. Ute hunters had a near-monopoly on hunting the small herds of mountain bison, and their seasonal expeditions to the the western Great Plains surely played a role in the disappearance of buffalo from the well-watered, fertile lands that lay in the Rockies’ shadows.

At the same time, because the Nuche had never abandoned their old ways completely to reorient their economy, society, politics, and culture around horses and bison, they retained

¹⁵² On Colorado specifically, see Andrews, “Tata Atanasio Trujillo’s Unlikely Tale,” 17-18; West, *Contested Plains*, 82-93; West, *Way to the West*. More broadly, see Flores, “Bison Ecology and Bison Diplomacy” and Andrew Isenberg, *The Destruction of the Bison* (New York: Cambridge University Press, 2000), 63-122.

ecological safety nets that their plains counterparts had opted instead to forsake.¹⁵³ Despite escalating incursions by enemies who found themselves increasingly hard-pressed to survive the conjoined disasters of bison decline and American colonization on the Great Plains, the Nuche maintained a firm hold over their traditional mountain homelands; as bison grew scarce in many of the Utes' favored hunting grounds, the Nuche placed renewed significance on their time-honored ways of fashioning a living from their traditional lands. This return to Ute basics almost certainly placed greater pressure on the mammals, fish, and plant resources of their old homelands.¹⁵⁴

As the trade in buffalo robes and hides was unleashing momentous changes across the Great Plains and into the parks and valleys of the Rockies, the second major element of the western fur trade, the quest for beaver pelts, was introducing equally unsettling transformations to the Rocky Mountain high country. As far back as the early seventeenth century, Utes had traded deerskins, horses, captives, saddles, and other goods to the *Nuevomexicanos*. These exchanges represented a modest elaboration and intensification upon long-standing trade networks that had earlier brought Apachean pottery and other goods from the Southwest to the RMNP region over the previous centuries. The Utes long held the upper hand in such exchanges. *Nuevomexicanos* grew deeply and utterly dependent on dressed deer skins they obtained from the Nuche. In 1754, more than 150 years after the founding of New Mexico, Governor Tomás Vélez Gachupín lamented that the New Mexicans “have no other commerce than these skins.” When conflicts erupted between the Nuche and the Spaniards and the Ute

¹⁵³ For a contrasting case, see West's treatment of the Cheyennes in *Contested Plains*.

¹⁵⁴ For more on the subsistence crises southern Utes faced by the 1850s, and the creative adaptations they fashioned in response, see Andrews, “Tata Atanasio Trujillo's Unlikely Tale of Utes, *Nuevomexicanos*, and the Settling of Colorado's San Luis Valley,” 24-25.

trade broke down, the governor lamented that his people were “without the possibility of clothing themselves and existing.”¹⁵⁵

Beaver pelts joined other deer skins and other trade goods flowing south from the Nuche country to New Mexico. The beaver trade began in earnest by the mid-1700s, when *Nuevomexicanos*, particularly detribalized Indian captives and their descendants from Abiquiu, Taos, and other northern settlements, began to mount illegal trading expeditions into the Ute country.¹⁵⁶ Governor Joaquin de Real Alencaster wrote in 1805 of the exploits of Manuel Mestas, whom he described as “longtime Ute interpreter and trader” and a “genízaro [a Spanish cognate of the English “janissary”] of Abiquiu,” who had conducted “commerce in furs, horses, and Paiute captives” with the Utes “for nearly fifty years.”¹⁵⁷ Spanish authorities sought as early as 1712 to prohibit trading expeditions into the Nuche country.¹⁵⁸ By the second half of the 1700s, though, Spanish officials also eagerly sought out traders familiar with the Nuche country as guides on expeditions into present-day Colorado and Utah, most notably the 1776 *entrada* in which Padres Dominguez and Escalante unsuccessfully attempted to locate a land route between New Mexico and Monterey, California.¹⁵⁹

Southern Utes may well have responded to the active demand for beaver pelts by killing more of the fur-bearers. By and by, animals, once valuable only insofar as the Utes themselves

¹⁵⁵ Quoted in David J. Weber, *The Taos Trappers: The Fur Trade in the Southwest, 1540-1846* (Norman: University of Oklahoma Press, 1971), 23.

¹⁵⁶ Weber claims that “beginning about 1750, the Utes had become a more dependable source of peltry” than the Comanches, from whom the Spaniards had previously obtained most of their beaver. Weber does not elaborate on the causes underlying this shift; presumably the Comanches’ migration onto the southern Plains and their growing might combined were both significant factors in this shift. *Ibid.*, 23.

¹⁵⁷ Quoted in Brooks, *Captives and Cousins*, 154-155. Janissaries were Christian captives conscripted by the Ottoman rulers into an elite force within the regular army.

¹⁵⁸ Weber, *Taos Trappers*, 23.

¹⁵⁹ Fray Escalante wrote of the fear of his party’s interpreter and guide, Andrés de Muñiz, of offending the Nuche “lest he ‘lose the ancient friendship which they maintain with them through the vile commerce in skins.’” Quoted in *ibid.*, 24.

could use them for meat, skin, bones, and fur, also became commodities, objects of exchange the Utes killed in order to obtain the trade goods they desired.¹⁶⁰ In the New Mexican trade, however, the southern Utes retained considerable power, as the American trader Thomas James learned in Santa Fe in 1821. James described the arrival in Santa Fe of Lechat, a chief leading a contingent “of fifty Indians from the Utah tribe on the west side of the mountains . . . all well mounted on the most elegant horses I had ever seen.” Lechat, whom James described as “a young man of about thirty and of a right Princely port and bearing,” informed James in Spanish “that he had come expressly to see me and have a talk with me. ‘You are Americans, we are told, and you have come from your country afar off to trade with the Spaniards. We want your trade,’” Lechat bluntly declared.

Come to our country with your goods. Come and trade with the Utahs. We have horses, mules and sheep, more than we want. We heard you wanted beaver skins. The beavers in our country are eating up our corn. [What Lechat meant by this is unclear, since the Nuche never grew maize for themselves.] All our rivers are full of them. . . . Come over among us and you shall have as many beaver skins as you want.

As for the Spanish, Lechat dismissed them as “poor—too poor for you to trade with. Then he concluded his pitch: “Come among the Utahs if you wish to trade with profit.” Of the Spaniards, Lechat asked, “what are they? What have they? They won[‘]t even give us two loads

¹⁶⁰ The classic interpretation of the fur trade as commodifying nature, thus introducing fundamental transformations in relationships between Indians and animals, is William J. Cronon, *Changes in the Land: Indians, Colonists, and the Ecology of New England* (New York: Hill & Wang, 1983), ch. 5.

of powder and lead for a beaver skin, and for a good reason they have not as much as they want themselves. They have nothing that you want. We have every thing that they have, and many things that they have not.”¹⁶¹

The northeastern Utes inhabiting the Kawuneeche Valley, meanwhile, differed from Lechat and his southern Utes in that the former group traded with New Mexico only sporadically and indirectly. Records on trade between the Nuche and *nuevomexicanos* make only scattered mentions of northeastern Utes, and then always as individuals or small groups accompanying larger parties of southern Utes. *Genízaros* and others involved in the illicit Nuche trade had little reason to leapfrog the southern Utes in order to reach the northeastern Nuche, and there is no record of Spaniards ever venturing north of Poncha Pass, above the Upper Arkansas Valley and almost two-hundred miles south of the Kawuneeche.¹⁶² Archaeological digs of seventeenth- and eighteenth-century Ute sites in northern and western Colorado, though almost invariably turning up some Euroamerican trade goods, also reinforce the hypothesis that the northeastern Utes had yet to grow dependent on outside exchange networks. Because the Nuche of the Kawuneeche had become only bit players in the Taos-based fur-trade of the 1700s, the real crisis for the beaver of the Rocky Mountain National Park region would await the direct invasion of Nuche territory by mountain men from the east after 1800.

When American fur trading companies began to set their sights on the Rockies, they endeavored not simply to tap into the mountains’ plentiful beaver populations, but also to liberate themselves from a business model that in one form or another had largely governed the

¹⁶¹ Thomas James, *Three Years among the Indians and Mexicans: The 1846 Edition Unabridged*, intro. A. P. Nasatir (1846; Philadelphia: Lippincott, 1962), 90-92.

¹⁶² Alfred Barnaby Thomas claimed that no official Spanish expedition had traveled further north in the Rockies than Poncha Pass. Alfred Barnaby Thomas, “Spanish Expeditions into Colorado,” *Colorado Magazine* 1 (Nov. 1924), 290. Illegal trading expeditions may have traveled up the Upper Arkansas and into South Park, but if they did, they left no trace in the historic record.

North American fur trade since European sailors and fisherman had first begun to funnel beaver pelts back home to eager consumers during the 1500s. The chief innovation of the so-called Rocky Mountain System that took shape by the mid-1820s was the boldness with which it dispensed with time-honored practices in the fur business. For some three hundred years, from the forests of northeastern North America to the Great Lakes and Hudson's Bay, Dutch, Swedish, French, British, and American enterprises had obtained most of their furs the same way the New Mexicans did: through trade with local Indians.

In many times and places, fur traders depended on Indians to bring beaver pelts to trading posts (often called "factories"); in other cases, as we have seen in the case of the illegal ventures launched from Abiquiu and elsewhere into the Nuche homelands, Euroamerican men ventured deep into Indian Country. There they and high-status native women often forged intimate relationships that also served as economic partnerships. Such marriages "according to the custom of the country" offered the families of those involved better access to goods and power from the outside world. Euroamerican traders, for their part, gained access to hunting territories, pelts taken by native trappers, and the political, cultural, and geographic knowledge possessed by their Indian kin.¹⁶³ Indians retained considerable power over the fur trade in this system, since the access of Euroamericans to beaver pelts depended on the Indians' territory, labor, and willingness to do business with outsiders.¹⁶⁴

¹⁶³ This paragraph summarizes a wide range of sources on the fur trade. Most significant among these are Chittenden, *The American Fur Trade of the Far West*; Sylvia Van Kirk, *Many Tender Ties: Women in Fur-Trade Society, 1670-1870* (1980; repr., Norman: University of Oklahoma Press, 1983); and Richard White, *The Middle Ground: Indians, Empires, and Republics in the Great Lakes Region, 1650-1815* (New York: Cambridge University Press, 1991).

¹⁶⁴ Chittenden acknowledged as much in his landmark work, *The American Fur Trade of the Far West*, I: 11. And the ongoing power of Indian peoples to shape the trade forms a central theme and argument of White, *Middle Ground*.

Following the American Revolution, the newly independent United States attempted to stabilize its extensive borders with Indian nations. Recognizing the violence and conflict that erupted almost anywhere fur traders plied their trade, the U.S. closely regulated exchange with Indian peoples; most importantly, Congress sought in 1796 to establish a “liberal trade with the Indians” by creating official trading houses in which government employees would exchange the furs Indians brought in for goods sold “at cost.” Private traders, however, successfully outcompeted and undermined this well-conceived but poorly executed system of government-controlled trade.¹⁶⁵ In 1822, Congress, thanks to heavy lobbying by John Jacob Astor’s mighty American Fur Company, ended the government’s direct participation in the fur business.¹⁶⁶

Just take a step back from the tumult between the government and the fur companies (as well as the intense inter-company rivalries that structured the trade), and it becomes apparent that throughout the early national period, the federal government essentially perpetuated a three-pronged strategy that fur traders had long deployed in their efforts first to erode, then to dismantle the autonomy of Indian peoples. First, traders cultivated the Indians’ dependence on trade goods, particularly guns, ammunition, alcohol, textiles, metal tools, ornaments, and markers of status. Next, traders extended ample credit to Indians in advance of each year’s fur-trapping seasons. Finally, they used the debts Indians thus accrued to force native peoples to overhunt beaver. In the Anglo-American colonies and the U.S. republic, traders and government officials eventually tended to form alliances by which they compelled Indian peoples to cede land via treaties, many of which contained provisions expressly benefiting resident fur traders and their mixed-race offspring.¹⁶⁷

¹⁶⁵ Chittenden, *The American Fur Trade of the Far West* I:14-17.

¹⁶⁶ *Ibid.*, I:16.

¹⁶⁷ George Catlin numbered among the many critics of U.S. trade policies toward Indian peoples; he wrote in 1841 that “the system of trade, and the small-pox, have been the great and wholesale

U.S. policymakers sought to mitigate the hazards presented by the first two stages of this strategy in order to secure the advantages of the third. No source better illustrates this than Thomas Jefferson's rejoinder to anti-federalist opponents of the Louisiana Purchase, the act whereby France ceded an enormous tract of land to the United States from the Continental Divide east, including much of the eastern half of today's Rocky Mountain National Park. Connecticut representative Gaylord Griswold forewarned that "the vast and unmanageable extent which the acquisition of Louisiana will give the United States, the consequent dispersion of our population and the destruction of that balance which it is so important to maintain between the Eastern and Western states threatens at no very distant day the subversion of our union." Jefferson responded that though the newly purchased Louisiana Territory would most likely remain a distant domain populated only by Indians and fur traders for at least the next half century, the traders would nonetheless pave the way for American settlers. These frontiersmen and frontierswomen, in turn, would incorporate former Indian homelands into the ever-expanding nation that Jefferson was beginning in 1803 to call "an empire for liberty."¹⁶⁸

As Jefferson anticipated, the fur trade would indeed play a crucial part in the transformation of the Rocky Mountain West into an American domain. American trappers and traders ventured into what is now Colorado soon after the ink was dry on the Louisiana Purchase.

destroyers of these poor people, from the Atlantic Coast to where they are now found. And no one but God, knows where the voracity of the one is to stop, short of the acquisition of everything that is desirable to money-making man in the Indian's country; or when the mortal destruction of the other is to be arrested, whilst there is untried flesh for it to act upon, either within or beyond the Rocky Mountains." George Catlin, *Letters and Notes on the Manners, Customs, and Conditions of the North American Indians ...* (New York: Wiley and Putnam, 1841), II: 250.

¹⁶⁸ David J. Wishart, *The Fur Trade of the American West: A Geographic Synthesis 1807-1840* (Lincoln: University of Nebraska Press, 1979), 17-18. Jefferson had spoken of the United States as an "empire of liberty" during the revolutionary era; he reformulated this favored catchphrase into an "empire for liberty" after the Louisiana Purchase. Richard H. Immerman, *An Empire for Liberty: A History of American Imperialism from Benjamin Franklin to Paul Wolfowitz* (Princeton, N.J.: Princeton University Press, 2010), 5.

The outsiders' numbers grew considerably in the 1820s, as the development of the Santa Fe Trail brought hundreds of trappers and traders into New Mexico, southern Colorado, and the surrounding areas. A few years later, in 1824, William Ashley of St. Louis developed the Rocky Mountain System, which David Wishart succinctly describes as "a successful production system based on beaver pelts, Euro-American trappers, and the Platte supply route."¹⁶⁹

Ashley, his partners, and, soon, his competitors pioneered the new business model that would depopulate the Colorado River Valley of beavers in just two decades. The key to the Rocky Mountain System was simple: instead of relying on the West's native peoples to supply labor as fur traders generally had for centuries, American fur-trade companies would circumvent the control Indians typically wielded during the initial stages of the fur trade by hiring trappers and directing them to push deep into Indian Country in armed brigades to set traps of their own. Trappers of European, African, Latin American, and Native American extraction began to push into the Colorado Rockies from Taos to the south, as well as from the plains to the East. The Kawuneeche Valley played a minor and unrecorded role in the mountain men's efforts to harvest beaver pelts.

By the early 1840s, fur trade companies had established posts that traced a ring around the present-day region of Rocky Mountain National Park: from the northern Colorado Piedmont (Forts Vasquez, St. Vrain, and Lupton) to southern Wyoming (Fort Laramie) to the Brown's Hole area of southwestern Wyoming (Fort Bridger) to Utah's Uintah Basin (Fort Uintah) and then to the Uncompaghe River near present-day Montrose, in western Colorado (Fort Roubidoux).¹⁷⁰ Fur traders and trappers only occasionally penetrated the heart of this ring, for

¹⁶⁹ Wishart, *Fur Trade of the American West*, 122.

¹⁷⁰ On Utah posts, see Scott J. Eldredge and Fred R. Gowans, "The Fur Trade in Utah," *Utah History Encyclopedia*, ed. Allan Kent Powell (print edition: 1994), online at: <http://www.media.utah.edu/UHE/f/FURTRADE.html> (accessed August 6, 2011); on Colorado posts, see

the high mountains of the Front Range, the Never Summers, and other ranges continued to pose formidable obstacles, even to self-proclaimed “mountain” men. As Hiram Martin Chittenden explained, “The mountainous sections of Colorado were not frequented by the trapper to the same extent as were the regions farther north. Possibly the very difficulty of traversing the country made it less desirable for operation. It was, of course, well known, and its streams were worked for beaver, but it did not compare in this respect with the region about the sources of the Missouri, Columbia, and Green Rivers.” Regarding the Colorado River, Chittenden concluded that its “watershed . . . was all good trapping territory, although not so much frequented by the traders as were the streams farther north.”¹⁷¹

Neither the records of the large fur-trading companies nor the accounts of the Rocky Mountain fur trade penned by Rufus Sage and other literate trappers make any clear references to the Kawuneeche Valley. This absence of evidence, though, hardly qualifies as evidence of absence: American trappers scoured the entire American West in search of pelts, apparently leaving few if any major streams unaffected. The mountain parks of Colorado, including Middle Park and North Park, were apparently worked for the first time in 1831; thereafter, fur-trade geographer David Wishart argues, “the Colorado Rockies became an important hunting ground.”¹⁷² Though the fur trade as a whole crashed by 1841—the last of the infamous Green River rendezvous took place in 1840, and demand for beaver collapsed in 1841 as haberdashers and their customers switched decisively from beaver hats to silk hats—Colorado remained “an important trapping ground” for some time thereafter, with ominous consequences for the

Carl Abbott, Stephen J. Leonard, and David McComb, *Colorado: A History of the Centennial State* rev. ed. (Boulder: Colorado Associated University Press, 1982), 36-40.

¹⁷¹ Chittenden, *American Fur Trade of the Far West*, II: 730, 772.

¹⁷² Wishart, *Fur Trade of the American West*, 145.

Kawuneeche.¹⁷³ Precisely when trappers had finished taking all or most of the beaver from the Kawuneeche is unclear. Accounts of the Kawuneeche from later in the nineteenth century rarely mention beaver, while twentieth-century sources record large populations of beaver along the Colorado and its tributaries—well in excess of 600 animals by the late 1930s.¹⁷⁴

The elimination or near-elimination of beaver from the valley must have initiated significant ecological changes, particularly to riparian corridors in which beavers had long functioned as ecosystem engineers.¹⁷⁵ Dams, lodges, and other beaver-built structures would have fallen into disuse. Spring floods, now unchecked, would have destroyed dams and carried the sediment and debris these dams impounded downstream. Slack water became less common. Free-flowing rivers and creeks generally pushed more of the sediment they carried downstream, instead of depositing it behind beaver dams. Many organisms, such as willow varieties reliant on freshly-deposited sediments for regeneration, would eventually have faced shrinking habitats as a consequence of beaver depopulation; the decline of willow thickets and even aspen groves, in turn, would have made it harder for elk, birds, and an array of other organisms to find food and shelter in the riparian areas of the Kawuneeche. Recent ecological research argues that the beaver of the Upper Colorado River played crucial roles in forming the riparian landscapes and ecosystems of the valley floor; the commodification of beaver and the resulting decline in beaver

¹⁷³ Ibid., 166.

¹⁷⁴ Fred M. Packard, "A Survey of the Beaver Population of Rocky Mountain National Park, Colorado." *Journal of Mammalogy* 28 (August 1947), 219-227.

¹⁷⁵ On beavers as ecological engineers, see, for example, F. Rosell, O. Bozer, P. Collen, and H. Parker, "Ecological Impact of Beavers *Castor fiber* and *Castor canadensis* and Their Ability to Modify Ecosystems," *Mammal Review* 35 (2005), 248-276; C.B. Anderson, G. M. Pastur, M.V. Lencinas, P.K. Wallem, M.C. Moorman, and A.D. Rosemond, "Do Introduced North American Beavers *Castor canadensis* Engineer Differently in Southern South America? An Overview with Implications for Restoration," *Mammal Review* 39 (2009), 33-52.

populations did much to unmake the hydrological, geomorphic, and biological contributions beavers had made over the preceding millennia.¹⁷⁶

The decimation of bison and beaver joined the incorporation of the Mountain West into global exchange networks, the adoption of the horse, and the eventual arrival of epidemic diseases in transforming the Utes' world. Together, these factors introduced sweeping changes to the Nuche. Yet it is easy from the perspective of hindsight to so exaggerate the pace and extent of change that we overlook a crucial fact: significant continuities also characterized Ute life from the sixteenth century through the nineteenth century. Despite the tumults these centuries of colonialism brought, the northeastern Utes remained hesitant to embrace a cultural-technological complex predicated upon the control and transformation of nature.

There is little evidence to suggest, for instance, that Indian fire-setting played a critical role in structuring forest or meadow ecosystems in the Colorado Rockies. Utes must have sometimes ignited forest fires by accident, but as John Wesley Powell noted from his work with the Utes and other Numic peoples that “the Indian never builds a large fire; he prefers to sit very close to a small one and expresses great contempt for the white man who builds his fire so large that the blaze and smoke keep him back in the cold.”¹⁷⁷ Moreover, studies of forests in the central Rockies have overwhelmingly concluded that fuel moisture conditions, not ignition, have long been the controlling factor in the fire regimes of subalpine forests. Even if the Utes set fires, in other words, these fires only burned significant stretches of forest if grass, shrubs, and

¹⁷⁶ Cherie J. Westbrook, David J. Cooper, and Bruce W. Baker, “Beaver Assisted River Valley Formation,” *River Research and Applications* (2010), www.interscience.wiley.com.

¹⁷⁷ Powell, “Home,” mss. 830, in Fowler and Fowler, eds., *Anthropology of the Numa*. Oral histories of elderly Utes provide evidence that Utes set fires in the San Juan Mountains through the 1920s; William L. Baker, “Indians and Fire in the Rocky Mountains: The Wilderness Hypothesis Renewed,” in Thomas R. Vale, ed., *Fire, Native Peoples, and the Natural Landscape* (Washington, D.C.: Island Press, 2002), 59. For more on Utes and forest fire, see chapter 2.

trees were sufficiently dry to continue burning. Climatic factors outweighed anthropogenic effects throughout the Utes' long inhabitation of the RMNP region: as William L. Baker, a pre-eminent scholar of fire and fire history in the Rocky Mountains concludes, "the hypothesis is that Indians were a small part of a large Rocky Mountain wilderness, with a fire regime, in much of the mountains, essentially free of human influence for millennia."¹⁷⁸

Though it is impossible to dismiss the probability of occasional anomalies—of an Indian-set fire raging through an entire watershed, say, or of localized overexploitation of a certain game animals—the Utes' impact on the Kawuneeche itself consisted primarily of relatively minor, small-scale interventions: blazing trails, procuring lodge poles and firewood, harvesting willow shoots for basket-making, taking sufficient fish and game to feed a few dozen people for a few weeks or months, gathering berries and other foodstuffs, drying medicine and meat for the long winter ahead, and perhaps encouraging the growth of plants that provided food, fiber, and medicine.¹⁷⁹ All of these interventions effected changes in the Kawuneeche's ecosystems, yet they generally seem to have unfolded within a more or less stable range of variability.

Archaeological reports, ethnographic accounts, and historical evidence all reveal the relatively limited material dimensions of native impacts on valley environments. For Indian peoples, though, these relationships encompassed the social and spiritual realms, too. The general locations of most Indian trails within RMNP might seem to follow the dictates of purely economic rationale. Yet University of Northern Colorado anthropologists claim: "ethnographic consultations with Ute elders informed us of their belief that certain trails served as conduits of

¹⁷⁸ *Ibid.*, 70.

¹⁷⁹ Fire ecologist Jason Sibold even proposes that an anomalous grove of ponderosa pine located near a known Ute campsite in the North Inlet watershed above Grand Lake may have been planted by the Utes so that later generations could harvest a crop of these favored seeds. Sibold interview with author, Nov. 22, 2010, transcript in this report.

spirit power which ‘spiritually’ connected sacred sites and spiritually significant natural features across the physical landscape.”¹⁸⁰

Many artifact sites in and near Rocky Mountain National Park also suggest that native peoples may have used some sites for astronomical purposes. Many North American nomads are known to have based the timing and direction of their movements in part on their ability to read the sky as a calendar; by moving across the earth, they evidently sought to maintain an alignment between the celestial world and the shifting landscape of the earth’s surface. By imparting the landscape with names and stories, and by aligning trails, campsites, and other artifacts to celestial bodies, the Nuche and their predecessors marked their place in the cosmos. In the process, they signified that the land, the sky, and the creatures inhabiting them were not just things, but beings.

Native peoples rarely drew firm lines between the sacred and the profane; instead, they charged the entire landscape with power and meaning. “In many Native American cultures,” claim the UNC team, “a sacred landscape constitutes a physical-psychological (cognitive) map of a seamlessly integrated spiritual and physical world based in religious belief, myth, and legend.” Deploying a variety of techniques, these scholars even hypothesize “a non-random patterning of site locations that appear to reflect a line-of-sight network of sites and sacred landscapes through much of the Park landscape,” particularly in the Trail Ridge Road area.¹⁸¹

All of this raises a crucial conundrum: To what extent should we consider a landscape humanized and cultural when it is inhabited in relatively small numbers for only limited portions of the year, and with minimal long-term ecological impacts? The definition of wilderness favored by American environmentalists—wilderness as those places where “man” is absent—

¹⁸⁰ Brunswig, McBeth, and Elinoff, “Re-Enfranchising Native Peoples in the Southern Rocky Mountains,” 61.

¹⁸¹ *Ibid.*, 62.

does not seem to match the Kawuneeche Valley. At the same time, it seems equally dangerous to overstate the depth and extent of the ecological transformations caused by the Nuche and previous inhabitants of the valley. After all, the valley lay far beyond the reach of agriculture, in a landscape where Indian peoples used fire rarely and with little effect and in which there is absolutely no evidence for faunal extinctions during the entire eleven millennia from the late Pleistocene through the onset of fur trapping. This was a place, in short, where the name of the game for millennia was simply to get in, fit in, and get out. Just because the Valley was inhabited does not mean that inhabitation entailed fundamental transformations to ecological systems and processes. Ultimately, the Kawuneeche constituted a sort of inhabited wilderness. Hardly a place “where man himself is a visitor who does not remain,” in the words of the 1964 Wilderness Act, it possesses a long and rich history of “human habitation.” At the same time, however, the Kawuneeche also remained, in the words of the same piece of legislation “an area where the earth and its community of life are untrammelled by man,” retaining its “primeval character and influence.”¹⁸² Native American knowledge of the valley was limited to the seasons in which they resided there, and the forceful interworkings of climate and topography in the valley continued to act much more powerfully on native peoples than those native peoples could ever act on the valley’s ecological or hydrological resources.

¹⁸² Wilderness Act of 1964.

Chapter 2:

Mining and the Kawuneeche Valley Environment

In the Kawuneeche Valley, as in many other parts of the American West, nineteenth-century mineral booms tended to have indirect, complex, and long-lived impacts on human-environment relationships. The enthusiasm that brought thousands of hopeful prospectors, capitalists, merchants, and hangers-on to Lulu City, Gaskill, and other now-defunct towns starting in the late 1870s constituted the culmination of a quarter-century of environmental and social change precipitated by discoveries of gold and silver well beyond the valley's confines. The 1858 strike made by William Green Russell's party of Georgians and Cherokees on the South Platte River set in motion a chain of events that would propel hopeful prospectors to scour every nook and cranny of the Colorado Rockies in search of gold and silver and lead to the removal of the Utes from the Kawuneeche Valley and its environs. Together, these events laid the foundations for the rush that drew gold- and silver-seekers into the Kawuneeche itself; no antecedent, of course, could insure the profitability of mining the valley. When the tide of people, animals, machines, and visions that had surged into the valley ebbed, the prospect holes, tunnels, log cabins, and trash heaps they left behind represented but the outward traces of a more pervasive reality: The Kawuneeche would never be mistaken for Leadville, Butte, or other western places made by mining.¹ And yet the valley would never be quite the same again.

¹ I borrow this image of mining trash heaps from the introduction to Patricia Nelson Limerick, *Legacy of Conquest: The Unbroken Past of the American West* (New York: Norton, 1987).



Lulu City Mining Camp, 1882. A band of wealth-seekers crowd around a makeshift camp in the Kawuneeche Valley, performing unknown domestic duties. Frank E. Baker photograph, historic photograph collection, catalog #10-F-7, negative #650, RMNP Photo Collection.

Ripples of Change: Pike's Peak Gold, Indian Removal, and the Kawuneeche

The story of the Pike's Peak Gold Rush has always served as the founding myth of Anglo Colorado—and for good reason.² Prior to 1858, very few Anglos migrated to Colorado, and they did so only in faint, sporadic trickles.³ After Green Russell's discovery, they surged in. More

² A large literature has emerged on the Colorado Gold Rush. Particularly insightful is Elliott West, *The Contested Plains: Indians, Goldseekers, and the Rush to Colorado* (Lawrence, Kans.: University of Kansas Press, 1998), esp. 115-201. See also Hubert Howe Bancroft, *History of Nevada, Colorado, and Wyoming, 1540-1888* vol. 25 in *The Works of Hubert Howe Bancroft* (San Francisco: The History Company, 1890), chs. 3-5; James Grafton Rogers, *The Rush to the Rockies: Background to Colorado History* (Denver: Colorado Historical Society, 1957); Rodman Paul, *Mining Frontiers of the Far West, 1848-1880*, rev., expanded edition by Elliott West (1963; Albuquerque: University of New Mexico Press, 2001), ch. 6; Kathleen A. Brosnan, *Uniting Mountain and Plain: Cities, Law, and Environmental Change along the Front Range* (Albuquerque: University of New Mexico Press, 2002), 10-63.

³ The best overviews of these trickles are Janet Lecompte, *Pueblo, Hardscrabble, Greenhorn: Society on the High Plains, 1832-1856* (Norman: University of Oklahoma Press, 1978) and Alvin T. Steinel, *History of Agriculture in Colorado: A Chronological Record of Progress in the Development of General Farming, Livestock Production and Agricultural Education and Investigation, on the Western Border of the Great Plains and in the Mountains of Colorado, 1858 to 1926* (Fort Collins: State Agricultural College for the State Board of Agriculture, 1926), 14-28.

than 100,000 made the arduous, hazard-filled journey in the spring and summer of 1859 alone.⁴ And though at least half of those who had ventured toward Colorado from California, Kansas, Nebraska, Missouri, New York, and beyond would abandon their journeys before or not long after arriving at the foot of the Rockies, the rush nonetheless greatly accelerated the pace and intensified the ruthlessness with which self-professed “Americans” took hold of the Native American and Hispano homelands of the southern Rockies.⁵

The strikes by Green Russell's men and those who eagerly rushed west in hopes of finding their fortunes almost immediately inspired speculators to lay out Auraria, St. Charles, Denver, and other townsites near the confluence of Cherry Creek and the South Platte River.⁶ It did not take long for most Argonauts, however, to discover two vital but unsettling truths. First, working the placer deposits of gravel and sand on the streambeds of Colorado's piedmont yielded no great bonanzas; indeed, most miners struggled to recoup enough gold to pay back the debts they often encumbered to outfit themselves for the rush, let alone the opportunity costs that accrued when they spent time panning for gold instead of pursuing more gainful pursuits.⁷ Second, the tiny flecks of gold that glittered along the beds of the Platte, Clear Creek, Boulder Creek, and other streams had to have come from elsewhere. Prospectors of the mid-nineteenth century dreamed of locating a “mother lode” of rich ore, the outer surface of which they

⁴ West, *Contested Plains*, 145.

⁵ West estimates that so-called “go backs” comprised about half of those who set out; *ibid.*, 175. Carl Abbott and his collaborators, by contrast, write that “observers believed only 40,000” of the “as many as 100,000 gold seekers” who had set out for Colorado ever “reached Denver.” Carl Abbott, Stephen J. Leonard, and Thomas J. Noel, *Colorado: A History of the Centennial State* 4th ed. (Boulder: University Press of Colorado, 2005), 52. Whatever the case, the entire non-Indian population of Colorado Territory stood only at 39,864 as of 1870. *Ibid.*, 468.

⁶ On town formation, see West, *Contested Plains*, 108-113; Brosnan, *Uniting Mountain and Plain*, 10-13; Noel and Leonard, *Denver: From Mining Camp to Metropolis*, 8-12.

⁷ Carl Abbott, Stephen J. Leonard, and David McComb, *Colorado: A History of the Centennial State* rev. ed. (Boulder: Colorado Associated University Press, 1982), 54-57. West shows that even when aggregated, the mineral deposits themselves failed to repay the capital invested in their exploitation. “Year after year,” he writes, “freight costs surpassed the worth of the product that supposedly was the reason for the settlements’ being there in the first place.” *Contested Plains*, 225.

suspected had been weathered and carried downstream but the main body of which, they fantasized, lay inviolate somewhere in the hills above the Platte Valley.⁸ And so ambitious prospectors thus began to work their way from the initial beachheads of the American invasion at Denver, Golden, and Boulder to the canyons and high country above.

By the end of 1859, the efforts of thousands of men poring over thousands of square miles of territory had yielded several promising finds: Gold Hill, above Boulder; Gregory Gulch, Russell Gulch, and several other diggings on Clear Creek and its tributaries; and a series of small placer deposits stretching up along the South Platte and its tributaries, though South Park, and over the Mosquito Range to Breckenridge and California Gulch (site of the future bonanza silver camp of Leadville).⁹ Among the least remunerative of these sorties was a push by prospectors into Middle Park; a few dozen miles from the foot of the Kawuneeche Valley they happened upon Hot Sulphur Springs, a favored Nuche spot for camping, bathing, and congregating.¹⁰

Wherever intruding Anglo-Americans ventured, they viewed the seemingly “new” landscapes they encountered through a set of deeply held ideologies about the natural world. Gold-seekers found much that was beautiful and awe-inspiring in Colorado's landscapes—and much that struck them as fearful, hideous, and wasteful, too. Above all, though, they viewed the landscape as a storehouse of discrete resources. Beneath Colorado's treasured rivers and

⁸ The term “mother lode” was used in California earlier in the 1850s; Californians who joined the Colorado Gold Rush presumably brought the term and its underlying (and largely incorrect) theoretical underpinnings to the Rockies. Duane A. Smith, “Mother Lode for the West: California Mining Men and Methods,” in James J. Rawls and Richard Orsi, eds., *A Golden State: Mining and Economic Development in Gold Rush California* (Berkeley and Los Angeles: University of California Press, 1999), 149-173.

⁹ Bancroft, *History of Nevada, Colorado, and Wyoming*, 376-84. Also founded in 1859 were Canon City and Colorado City.

¹⁰ Robert C. Black, III, *Island in the Rockies: The History of Grand County, Colorado, to 1930* (Boulder: Published for the Grand County Historical Society by Pruett Publishers, 1969), 33-35; Frank Hall, *History of the State of Colorado . . .* (Chicago: Blakely Printing Company, 1895), IV, 138.

mountains, the incomers believed, a beneficent Providence had seen fit to bury gold, silver, and other minerals. For eons, these riches had lain untouched by human hands, awaiting the foreordained arrival of Americans, God's chosen people, whose industry would turn the Rockies' hidden placers, veins, and lodes into personal wealth and national power.¹¹ Alas, the Americans' God, as befitted a figure of incomprehensible potency, moved in mysterious ways. Colorado's gold and silver deposits proved difficult to locate, extract, and refine. Instead of the fabled "mother lode," the region instead possessed an extremely irregular "mineral belt," the precious metals of which lay imbricated in complex subterranean deposits and tight molecular bonds. As nineteenth-century historian Hubert Howe Bancroft explained, "the minerals of Colorado were not easy to come at. ... Nor was there any rule of nature known to mineralogists which applied to the situation of mines in Colorado, and old traditions were entirely at fault."¹² In time, metallurgists would devise various new methods to replace the faulty "old traditions" Bancroft had lambasted. Yet the most successful of the new techniques devised from the 1870s onward to extract gold and silver from Rocky Mountain ore required huge inputs of fuel in the form of charcoal or coke; most methods also worked best when applied to mixtures of various kinds of ore. Successful mining ventures in Colorado, in short, required either nearby smelting facilities, or affordable routes by which to haul ore to those locales where capitalists could most cheaply concentrate mineral-bearing rock from around the region with high-carbon fuels from the forests and mines of the southern Rockies.¹³

¹¹ Frederick Merk, *Manifest Destiny and Mission in American History: A Reinterpretation* (New York: Knopf, 1963); Anders Stephanson, *Manifest Destiny: American Expansionism and the Empire of Right* (New York: Hill & Wang, 1995).

¹² Bancroft, *History of Nevada, Colorado, and Wyoming*, 332.

¹³ Thomas Andrews, *Killing for Coal: America's Deadliest Labor War* (Cambridge, Mass.: Harvard University Press, 2008), ch. 2; On the significance of smelting in Colorado, see James E. Fell, *Ores to Metals: The Rocky Mountain Smelting Industry* (Lincoln: University of Nebraska Press, 1979).

Posing an even more immediate obstacle to mining's development, of course, were the Indian peoples who inhabited much of the land Americans coveted. Westering Americans from every part of the country and most every level of society had developed a deep antipathy toward Native Americans.¹⁴ Most new arrivals to Colorado came pre-disposed not simply to hate the Utes, the Arapahos, and other native peoples, but also to desire that the Indians be concentrated and removed; more than a few Anglos dreamed of a western future in which Indians were not simply marginalized, but eradicated.¹⁵ Racism is never simply a cultural or social phenomenon; it virtually always involves struggles for material power between contending groups. To Colorado's American invaders, the presence of independent Indian peoples seemed to pose a dangerous threat to the Americans' quest for wealth, social status, and security.¹⁶

The Cheyennes and Arapahos, the most powerful Indian nations on Colorado's eastern plains during the early 1800s, found themselves increasingly squeezed during the middle decades of the century by declining bison populations and Anglo inroads. The Indians' position suffered further in the late 1850s and 1860s, as Anglos blazed several trails to the goldfields; established dozens of so-called "road ranches" providing food, drink, and shelter to travelers along these

¹⁴ A vast literature documents this hatred; still compelling are Richard Slotkin, *Regeneration through Violence: The Mythology of the American Frontier* (Middletown, Ct.: Wesleyan University Press, 1973); Richard Drinnon, *Facing West: The Metaphysics of Indian-Hating and Empire-Building* (Minneapolis: University of Minnesota Press, 1980); and Reginald Horsman, *Race and Manifest Destiny: The Origins of American Racial Anglo-Saxonism* (Cambridge, Mass.: Harvard University Press, 1981).

¹⁵ Here the large body of work on the Sand Creek Massacre and the Ute War suffice to establish the point. See, in particular, West, *Contested Plains*, 190-193; Brosnan, *Uniting Mountain and Plain*, ch. 2.

¹⁶ In a recent essay, Rob Harper laments that "the scholarly literature on anti-Indian violence . . . remains largely a literature on Indian hating, obscuring rather than explaining the social and political context in which these atrocities took place." Harper goes on to implore historians to "explore why nonperpetrators tolerated or condoned perpetrators' brutality and whether communities were more willing to acquiesce to violence at certain times." "Looking the Other Way: The Gnadenuhuten Massacre and the Contextual Interpretation of Violence," *William and Mary Quarterly* 64 (July, 2007), 624-25. In the case of frontier Colorado, though, Indian hating was so widespread that it pervaded the context in which anti-Indian violence transpired, though a range of other factors, of course, also shaped outcomes of white-Indian conflict, as I detail below.

trails; and filled the well-watered valleys that spilled out from the base of the Rockies with a growing network of cattle ranches, farms, and towns.¹⁷ From the 1850s onward, heated debates raged within both Indian and Anglo societies: Did peace or war offer a more promising solution to the sharply divergent dilemmas natives and newcomers both faced? Cheyenne and Arapaho warrior societies, having recognized the strategic significance of the ground they occupied, almost always counseled war against the Americans.¹⁸ Until at least 1867, the Anglo settlements of Colorado remained unable to grow enough food to support their own populations; white settlers depended on the trails stretching across the plains from Colorado to the Missouri Valley for supplies of grain, vegetables, coffee, sugar, and most everything else they ate and drank (not to mention the tools and machines they worked with, the capital they needed to build mines and cities, the luxury goods wealthier settlers desired to mark their elevation above the *hoi polloi*, and much else). Colorado's Anglos (used here in the peculiar manner of southwesterners: as an agglomeration of "whites," generally of northern and western European ancestry) recognized that their dependence on the roads across the plains rendered them extremely vulnerable. The fact that Plains Indian warriors seemed to hold the power to shut off the flow of food and other essential goods across the plains contributed some of the shrillest and most fervent notes to the growing chorus of Colorado settlers crying out for the conquest and eradication of the region's native peoples.¹⁹

In November, 1864, Colorado's ambitious political and military leaders responded to the popular outcry by massacring a camp of Cheyennes and Arapahos at Sand Creek. This outrageous attack prompted several federal investigations. But Congressional censure of the

¹⁷ West, *Contested Plains*, ch. 9; Brosnan, *Uniting Mountain and Plain*, chs. 2 and 3; Steinel, *History of Agriculture in Colorado*, 31-45, 53-58, 63-67. .

¹⁸ West, *Contested Plains*, chs. 10-11; Margaret Coel, *Chief Left Hand: Southern Arapaho* (Norman: University of Oklahoma Press, 1988), 186-88..

¹⁹ I develop these points in *Killing for Coal*, chs. 1-2.

conduct of some of Colorado's political and military leaders failed to convince most Plains Indians that the government could be trusted to protect their interests.²⁰

The Americans' quest for land and security intensified, provoking further conflict. By 1869, American settlers and soldiers had defeated the Indians of the Colorado Plains. The U.S. government effectively removed the Cheyennes and Arapahos from Colorado, eventually resettling these peoples on reservations Wyoming (Northern Arapaho at Wind River), Montana (Northern Cheyenne), and Indian Territory (Southern Arapaho and Southern Cheyenne).²¹ Arapaho visitation to the Kawuneeche—probably initiated only in the early 1800s, and never common or long-lasting—had already become exceedingly rare after 1860 as the Arapahos followed the retreating bison herds away from the Rockies and split into two groups, one ranging mostly north of the Platte River, and the other mostly inhabiting lands south of the Arkansas River.²² Future Arapaho journeys to Rocky Mountain National Park area presumably awaited the renewal of Indian travel and migration during the automobile age, with the exception of the 1914 pack trip on which Oliver Toll quizzed two elderly Arapahoes who had voyaged to Colorado by wagon and trail in order to recover and record the Arapaho names of various features within the proposed national park.²³

²⁰ Stan Hoig, *The Sand Creek Massacre* (Norman: University of Oklahoma Press, 1961); Jerome A. Greene and Douglas D. Scott, *Finding Sand Creek: History, Archaeology, and the 1864 Massacre Site* (Norman: University of Oklahoma Press, 2004).

²¹ West, *Contested Plains*, ch. 11; Dee Brown, *Bury My Heart at Wounded Knee: An Indian History of the American West* (New York: Holt, Rinehart, & Winston, 1970); John H. Monnett, *The Battle of Beecher Island and the Indian War of 1867-1869* (Boulder: University Press of Colorado, 1992); John H. Monnett, *Tell Them We Are Going Home: The Odyssey of the Northern Cheyennes* (Norman: University of Oklahoma Press, 2001); Eugene H. Berwanger, *The Rise of the Centennial State: Colorado Territory, 1861-1876* (Urbana: University of Illinois Press, 2007), 23-37; Loretta Fowler, *Arapaho Politics, 1851-1978* (Lincoln: University of Nebraska Press, 1982).

²² In the early 1860s, Arapaho parties repeatedly attacked Utes in South Park. Virginia McConnell Simmons, *The Ute Indians of Utah, Colorado, and New Mexico* (Niwot, Colo.: University Press of Colorado, 2000), 109. But conflicts in Middle Park seem to have abated.

²³ This, at least, was the premise which underlay the Toll expedition. Oliver W. Toll, *Arapaho Names and Trails; A Report on a 1914 Pack Trip* (n.p.: privately published, 1962). Robert H. Brunswig

The diabolical machine of Indian removal functioned as effectively in the mountains, valleys, and plateaus of central and western Colorado as it had on the plains, if a little more slowly because of the difficulty of the terrain, the Utes' superior knowledge of the country, and the ability of Nuche and American leaders to mollify militants among their respective peoples via skillful diplomacy. As Americans neutralized the Utes' Arapaho enemies, the Nuche enjoyed a few seasons of renewed primacy in the Kawuneeche and its environs. The new arrivals to the Rockies even provided the Utes with new opportunities for trading and raiding. In the spring of 1861, for instance, a Ute party "ran off about 125 horses belonging to some latter-day trappers in the La Porte area," on the Poudre River west of Fort Collins.²⁴ Even with Colorado Territory only in its infancy, the Utes were already confronting a hard lesson: The newcomers were not going to relent in their quest to profit from the natural wealth of the country the Nuche inhabited—its furs and minerals, its trees and coal, its grasses and transportation routes. The reaction of the trappers dispossessed of their horses by Ute raiders at La Porte epitomized the ferocity with which the newcomers responded to the Utes' efforts to turn the American invasion to their own advantage. The mountain men caught up with the raiding party in North Park, dispossessed one Ute of his ears, and killed the rest.²⁵

is skeptical that the Arapaho presence had ever amounted to much; "five years of intensive archaeological survey ... was unable to find definitive physical evidence of an Arapaho presence in the Park", *Prehistoric, Protohistoric, and Early Historic Native American Archaeology of Rocky Mountain National Park*, vol. 1, *Final Report of Systemwide Archaeological Inventory Program Investigations by the University of Northern Colorado (1998-2002)*, National Park Service Project ROMO-R98-0804 (Greeley, Colo.: University of Northern Colorado, 2005), 135. For an intriguing discussion of Native Americans and automobiles, see Philip J. Deloria, "Technology: I Want to Ride in Geronimo's Cadillac," in *Indians in Unexpected Places* (Lawrence: University Press of Kansas, 2004), 136-182. The Kawuneeche Valley lay a short excursion away from the major highway routes between the southern Arapaho reservation in Oklahoma and the northern Arapaho homelands of the Wind River Reservation in Wyoming.

²⁴ Simmons, *Ute Indians*, 110.

²⁵ *Ibid.*, 110.

Only bold or misguided Utes suffered from the brutal brand of retribution the trappers dispensed. All Nuche, though, would soon experience the deleterious changes set in motion as Americans busily endeavored to open Nuche homelands to mining, road-building, and town development. In May of 1861, after Edward Berthoud located a route up a pass subsequently named in his honor, William Gilpin, Colorado's territorial governor, sought to appease rising tensions between the Nuche and the Americans by urging his superiors in the Office of Indian Affairs to locate an Indian agency in north-central Colorado. Harvey M. Vaile, the first of many ineffectual U.S. agents to the Utes, took up the new post but accomplished little. Vaile's replacement, Simeon Whiteley, arrived in Middle Park in the summer of 1863.²⁶ Shortly thereafter, raids by northeastern Utes on overland stagecoach stations in southern Wyoming joined tensions between Utes and parties of prospectors in Middle Park to the U.S. government with a pretext for seeking a treaty with the Eastern Utes, including the Grand River and Uintah bands.²⁷ But agents proved unable to locate any White River, Grand River, or Yamparika Utes with whom to parley. So the government instead decided to hold treaty negotiations at Conejos, in the San Luis Valley some two hundred miles to the south of Middle Park, in an area only rarely frequented by the bands with whom the United States felt most needful of forging peace.²⁸

The resulting treaty, signed in October of 1863 by leaders of the Tabeguache band (whose lands lay primarily in a band of central Colorado stretching from the Uncompaghre Plateau to the plains east of Denver and Colorado Springs), and amended and confirmed by Congress in 1864, ceded to the federal government most of the northern and western extremities

²⁶ Ibid., 114. Simmons suggests that the desire of William Byers to develop Hot Sulphur Springs helped to inspire both Berthoud's route over the pass, and Gilpin's appointment of a Ute agent for Middle Park. She also notes that Utes had used Berthoud Pass, but favored Rollins Pass as a route between Middle Park and the Plains. Ibid., 114-115. Black, on the other hand, argues that neither Indians nor mountain men knew of this route; *Island in the Rockies*, 36-38.

²⁷ On stage station raids, see Simmons, *Ute Indians*, 115-116.

²⁸ Black, *Island in the Rockies*, 43-46; Simmons, *Ute Indians*, 116-117.

of the Tabeguaches' customary lands. In the process, the treaty extinguished any Tabeguache claim to the Kawuneeche Valley. In exchange, the United States recognized the Tabeguaches' tenure over hunting grounds to the south and west and promised annual payments of "goods" and "provisions" at the Tabeguache agency; the construction of a blacksmith shop to serve the band; and shipments of cattle, sheep, "and stallions for breeding stock"—provided, of course, that the Tabeguache abandon their hunting and gathering ways.²⁹ Though the Southern Utes had actually been raising horses for at least two centuries by that point, and other livestock for several decades (as the chief Lechat bragged in 1821 to Thomas James when he implored the American to trade with the Utes, not the Spanish), the U.S. treaty commissioners desired to accelerate the transformation of the Nuche into settled, self-supporting husbandmen capable of surviving and perhaps even thriving after their eventual confinement to a tiny fraction of their former domain.³⁰

Congress, though, had greater concerns than civilizing a few thousand Indians on a distant Rocky Mountain frontier. Prioritizing the conduct of the Civil War over the fulfillment of its treaty obligations with Indians nations, that legislative body only slowly and indifferently appropriated the funds required to hold up the government's end of the bargain its commissioners had made with the Tabeguaches. It took fully two years, to cite just one specific Ute grievance, for the government to distribute from the Clear Creek County mining camp of Empire "large numbers of sheep for Utes attached to the Middle Park Agency."³¹

²⁹ Treaty with the Utah-Tabeguache, Oct. 7, 1863, 13 Stat. 67, *Treaties*, vol. 2, *Indian Affairs: Laws and Treaties*, ed. Charles J. Kappler (Washington, D.C.: G.P.O., 1904), 856-59; Simmons, *Ute Indians*, 117-118. on stallions, see Berwanger, *Rise of the Centennial State*, 38.

³⁰ On southern Ute efforts to incorporate goats and other livestock into their lifeways as a response to the subsistence crises these bands suffered around 1850, see Thomas G. Andrews, "Tata Atanasio Trujillo's Unlikely Tale of Utes, Nuevomexicanos, and the Settling of Colorado's San Luis Valley," *New Mexico Historical Review* 75 (2000), 24.

³¹ On Congressional foot-dragging, see Simmons, *Ute Indians*, 118; on graft by Ute agents and Colorado governors, see *ibid.*, 126; on sheep, see *ibid.*, 121.

Federal parsimony frustrated the Tabeguaches; other Nuche bands, meanwhile, remained resentful of the core conceit of the 1863 Tabeguache Treaty had been conducted. Historian Robert Black III captures contemporary American interpretations in his argument that the treaty "implied that Middle Park was no longer Indian country."³² In truth, the agreement changed little in the eyes of those Nuche bands that had long inhabited Middle Park, the Kawuneeche Valley, and other parts of north-central Colorado. Family groups from the bands then known to Americans as Yamparikas or White Rivers, Uintahs, and Grand Rivers continued to treat those areas as integral parts of their homeland; indeed, the Rocky Mountain National Park area likely became more appealing to many Utes as the intensifying American campaigns against the Arapahos and Cheyennes reduced the risks Utes ran of Plains Indian raiding parties striking into the Nuche homelands.³³

Though they had to wait three years, those Utes who continued to deny that the Tabeguache Treaty extinguished their claims to Middle Park and its environs eventually received federal recognition of their position. In the summer of 1866, federal policy-makers again sought to negotiate a treaty with the northeastern Utes. Several headmen signed the Treaty of Middle Park with D. C. Oakes, Simeon Whiteley's successor as Ute agent, and Alexander Cummings, Colorado's Territorial Governor and *ex officio* Superintendent of Indian Affairs. By this agreement, the Yamparika, White River, and Grand River bands acquiesced to the construction of a stage road through Middle Park. Under no circumstances, however, would they cede their hunting grounds to the United States.³⁴ The Senate, perhaps seeking to punish the Utes for their intransigence in the negotiations, refused to ratify the treaty, so it never gained the force of law.

³² Black, *Island in the Rockies*, 46 (quoted); Simmons, *Ute Indians*, 117.

³³ On the extension of Ute bison hunting following 1869, for instance, see Berwanger, *Rise of the Centennial State*, 37.

³⁴ Simmons, *Ute Indians*, 125-126.

According to Black, though, “the Treaty was not entirely fruitless. It helped provide an arrangement, imperfectly defined, yet briefly effective, whereby each party could use [Middle Park] according to its own inclinations.”³⁵

Whatever the realities on the ground, joint occupation cut sharply against the grain of a federal Indian policy devoted to extinguishing Indian title. Thus the Americans sought another treaty in 1868, this time with all of the eastern Ute bands, including the White River, Grand River, Uintah, and Southern Ute groups. The resulting document, unlike its predecessor, was ratified by the Senate; the treaty of 1868 legally extinguished the claims of all Nuche to the Kawuneeche Valley.³⁶ Black claims that even so, the Utes “continued to roam [Middle Park] each summer, treaty or no treaty,” and “sizable bands continued to wander eastward through the mountains and onto the plains, a habit . . . granted a kind of official sanction by the retention until 1875 of a special agency for the ‘roving’ Utes” in Denver.³⁷

The Utes grew increasingly insistent over the course of the late 1860s and early ‘70s in their opposition to Anglo invaders. The Indians attacked a party of miners near Hahns Peak in 1866, set fire to a blacksmith shop at Hot Sulphur Springs in 1870, assaulted prospectors in North Park in 1870, and threatened at gunpoint William Byers’ manager and several campers at Hot Sulphur Springs in 1872. For a brief period thereafter, relations between Utes and settlers actually improved to the extent that an 1874 article in the Georgetown *Miner* joked of the Nuche that they were just “a bit more dangerous than lame, blind bears.”³⁸ The Indians, in other words,

³⁵ Black, *Island in the Rockies*, 57.

³⁶ Berwanger rather ludicrously calls this “the most generous treaty ever made between the U. S. government and any Native American group”—curiously faint praise indeed, given the history of federal treaty-making. *Rise of the Centennial State*, 39.

³⁷ Quotes from Black, *Island in the Rockies*, 116. On the Denver Agency, which operated from 1871 to 1875, see Simmons, *Ute Indians*, 139-140, 173.

³⁸ Quoted in Black, *Island in the Rockies*, 116. On northeastern Ute misdeeds, see *ibid.*, 77; Simmons, *Ute Indians*, 126, 141

could strike unpredictably and with fearsome rage, but the wise and the cautious had little to fear from them.

Events would prove the *Miner's* optimism misplaced. Some Utes sought refuge away from white settlements by this time. The famous Tabeguache leader Ouray, for instance, established a large ranch during the middle 1870s near what is now Montrose, in west-central Colorado; a mixed Jicarilla Apache-Ute who had spent part of his adolescence as a servant on a New Mexican *rancho*, Ouray took pains to round out his *hacienda* with irrigation ditches, gardens, a “four-room adobe house” in the New Mexican style, and quarters for the Hispano laborers he employed at government expense to cultivate the Ute farmlands. Many Nuche, though, continued to hunt, trade, raid, recreate, and camp around Denver, South Park, the San Luis Valley, the Pike’s Peak Region, and other sites of Anglo and Hispano settlement.³⁹ Other Utes continued to live largely according to their traditional lifeways in the high mountains and remote plateaus of Colorado and Utah. The vast majority of Nuche, wherever and however they lived, had no intention of abandoning their ancestral homelands. The pressures exerted by the incoming Americans may have abated temporarily around the time of the article in the *Miner* likening the Utes to volatile but essentially harmless bears. But the fundamental conflict between the whites’ desire for territory and the yearning of the Nuche to retain sovereignty over their lands endured.

Middle Park and surrounding areas remained peripheral during the early years of the Colorado Gold Rush. Prior to 1865, not a single legal filing to turn public land into private property occurred within the future boundaries of Grand County. Over the ensuing decade, though, Hot Sulphur Springs and Grand Lake started to grow into small resorts, and the Cozens

³⁹ Simmons, *Ute Indians*, 173, 175.

family started a hay and cattle operation near present-day Fraser.⁴⁰ Still, local Middle Park historian Robert Black maintains that all of this was but a prelude to the summer of 1874, which “witnessed the beginning of *settlement*—of the purposeful kind that is legally recorded.”⁴¹ The completion of toll roads over Berthoud and Rollins passes (both built in 1873-'74), as well as the blazing of more difficult, unimproved travel routes over several other passes stretching between the watersheds of the Cache La Poudre and South Boulder Creek, linked the Kawuneeche and its environs to the urban markets of mining camps and piedmont metropolises.⁴² Thus in 1874, the very same year that trouble between whites and Utes finally seemed to be on the wane, Americans began to push into the Middle Park country their government had supposedly secured from Utes in the treaty negotiated in 1868.

At the time, few northeastern Utes understood or cared about the provisions of an American legal system premised on utterly foreign notions of property, title, representation, and contract. To them, the Grand County area remained Nuche land. Imagine the Utes’ displeasure, then, as Americans moved in and began to turn the wild things of the region into commodities, some of which the newcomers tried to ship out from Middle Park to markets in the flourishing mining camps and towns beyond. A second wave of white trappers took up where the mountain men had earlier left off, taking furs but also hunting larger game they intended to sell in urban markets. As late as 1883, Frank Byers and "Ute" Bill Thompson hauled more than seven tons of

⁴⁰ Black, *Island in the Rockies*, 79.

⁴¹ *Ibid.*, 89. Significantly, the first meeting of the Grand County Board of County Commissioners was held on November 9th, 1874. *Proceedings of the Grand County Commissioners*, Grand County Courthouse, Hot Sulphur Springs, Colorado, book 1, p. 1.

⁴² Black, *Island in the Rockies*, 85. The very first act of Grand County’s Board of Commissioners, after accepting the bonds posted by the county’s new officers, was to set tolls on the Rollinsville and Middle Park Wagon Road. Tolls were largely based on the number and type of animals the customer rode or drove. “[L]oose stock,” for instance, was charged at once cent per mile, but “Pack Animals” at seven cents per mile.” The commission also set tolls on the road from Hot Sulphur Springs and the Utah border, the Grand River Bridge at Hot Sulphur, and the Georgetown, Empire, and Middle Park Wagon Road. Nov. 9, 1874, *Proceedings of the Grand County Commissioners*, book 1, p. 1-2.

dressed meat (most of which presumably consisted of deer and elk) to hungry customers in Georgetown and Denver.⁴³

While the work of Byers and Thompson represented an intensification of the well-established practice of placing prices on the region's native fauna, the extension of ranching into Middle Park and the high mountain valleys constituted an altogether novel development. The first stock brand in Grand County was registered in 1875; within a decade, ranchers had placed 175 more brands on the books. Making and registering brands represented a crucial step in the critical project by which Americans sought to establish and police property rights over burgeoning herds of exotic livestock, which would grow to more than 13,000 head by 1883.⁴⁴

Most of the early ranchers in the Middle Park region, as in the American West more generally, sought to establish direct ownership over but 160 acres or so of prime irrigable land. Such modest spreads, established under the auspices of the Homestead Act of 1862 and other public land laws, proved woefully insufficient for year-round stock-raising in an area where it took several acres of native grass to support a single cow, and where the harsh winter climate either covered available pasture with snow, or killed livestock outright. So ranchers astutely located their homesteads on parcels that controlled access to large swaths of adjacent public lands, on which they could then graze their animals without charge or penalty. The most desirable ranching sites also possessed ample water and meadowland, which together provided the hay mountain ranchers needed to keep the animals that summered on the public domain alive through the winter killing season.⁴⁵ Though evidence is lacking, it seems very likely that during

⁴³ Black, *Island in the Rockies*, 145.

⁴⁴ This figure represents an estimate. *Ibid.*, 131, 171.

⁴⁵ Even as late as the exceptionally dry summer of 1934, the Grand County Board of Commissioners declared a state of emergency in the county because “the hay growth in the County has been and now is but a very small percentage of normal so that only a small hay crop can be obtained by

the mid-to-late 1870s, at least a few stockmen may have begun to lead cows and sheep onto the rich meadows of the Kawuneeche, particularly to the valley floor but perhaps also to the rich meadows of the subalpine zones above.

As for the Utes, factions of the White River band grew increasingly militant during the 1870s, driven in no small part by the environmental and social transformations caused by white settlement in Grand County and adjacent areas. Several dozen members of the White River band joined the U.S. Army to help punish the Lakotas and Northern Cheyennes after George Armstrong Custer's disastrous defeat at the Little Bighorn (or, to the Indians involved, the Greasy Grass).⁴⁶ But this alliance was doomed by an irreconcilable conflict: the fears and aspirations of American newcomers began to butt up against the Nuches' obvious desire to continue occupying their traditional lands. During the mid-1870s, prospectors flooded into Leadville, the Flattops, North Park, and the Roaring Fork, Blue, and Crystal River Valleys. The growing American presence blocked many northeastern Nuche off from important resource-procurement sites, travel routes, and sacred places. William Byers, *Rocky Mountain News* impresario, banned Utes from Hot Sulphur Springs, which he had acquired under the U.S. land system. Fences also excluded the Indians from Steamboat's Medicine Springs, not to mention providing a barrier between the Utes and their horses, on the one hand, and prime pasture, on the other. Even worse than these indignities was the federal government's disregard for its treaty obligations. The provisions and goods promised to the Indians remained slow to arrive at the agency constructed on the White River in the early 1870s. And when the beef, wheat, blankets, and so forth finally did arrive, the items proved almost invariably low in quality because of the

the ranchmen of the County with which to feed their cattle, horses and sheep during the coming Fall and Winter." Resolution, July 18, 1934, *Proceedings of the Grand County Commissioners*, book 4, p. 395.

⁴⁶ Simmons, *Ute Indians*, 178-179. David Rich Lewis indicates that these were "Utah Utes," leading to the possibility that some may have been Uintas. *Neither Wolf Nor Dog: American Indians, Environment, and Agrarian Change* (Lincoln: University of Nebraska Press, 1994), 41-42.

graft and ineptitude of Indian agents, freighters, contractors, and politicians.⁴⁷ The situation at the White River Agency henceforth deteriorated rapidly; “by 1878,” writes historian Virginia McConnell Simmons, “the breaking point at White River had been reached.”⁴⁸

The trouble at the agency (located near the present site of Meeker) even spilled over into Middle Park. After a fight with Americans on the eastern plains, one Ute party retreated to Middle Park; there they “began cutting harnesses on horses and tearing down fences” at the Junction Ranch (at the present-day site of Tabernash) “while the women set up tepees in a meadow.” The Utes greeted a posse deputized to punish them with contempt; after the settlers responded by killing the White River leader Tabernash, the Utes retreated westward. Along the Blue River, they claimed the life of a rancher in retaliation for Tabernash’s killing. Eventually, several leaders of the White River Nuche returned to Hot Sulphur Springs and consented to repatriate all of the horses they had taken in the course of the conflict.⁴⁹ After this gesture of conciliation, both sides stood down.

Any hope of a long-term peace between the northeastern Utes and the Americans withered, though, once the unusually hot and dry summer of 1879 baked and broiled the Colorado Rockies. The new agent at White River, Nathan Meeker, who arrived just one year earlier, was earnestly entreating the Utes to adopt sedentary agriculture and Christian respectability. Most Nuche, though, felt no compulsion to embrace the Americans’ alien ways, beliefs, and pretensions. Meeker further infuriated many Ute militants by moving the agency buildings and farm to Powell Park. The Nuche had long used this grassland to race their beloved

⁴⁷ Simmons, *Ute Indians*, 179-180.

⁴⁸ *Ibid.*, 180.

⁴⁹ *Ibid.*, 181-182.

horses. The thought of plowing Powell Park under to try to grow grain struck the Nuche as the height of stupidity.⁵⁰

The Americans, for their part, remained insistent on pushing the Utes aside. Unlike those educated Northeasterners who tended to see Indians through a lens refracted by myths of noble savagery, and thus as mirrors onto a benevolent nature, Colorado settlers accused the Nuche of embarking upon a campaign to spite the whites by scorching the Colorado earth. Newspaper articles blamed the Nuche for setting forests ablaze, wantonly killing game, and burning homesteads.⁵¹ Historian Robert Black III, writing in 1969, faithfully reproduced the belief of Middle Park's ranchmen nearly a century earlier; the Nuche were desperate and debased enough, cattlemen felt sure, to destroy the very organisms that had long supported their way of life:

Though the Indians abstained from serious invasions of ranch property, they relieved their frustrations with deliberate assaults upon the resources of the region. There was an indiscriminate slaughter of game; perhaps half the deer and elk, most of the antelope, and nearly all of the small remnant of mountain bison were dispatched and left to rot, and through the whole of an exceptionally dry summer the mushroom clouds of forest fires—many obviously set—hung over the land. The quality of Middle Park hunting would never again be quite the same, and the estimates of the timber losses ran as high as ten million dollars.⁵²

⁵⁰ Marshall Sprague, *Massacre: The Tragedy at White River* (1957; Lincoln and London: University of Nebraska Press, 1980), 145-46.

⁵¹ Simmons, *Ute Indians*, 182-183.

⁵² Black, *Island in the Rockies*, 129.

The nineteenth-century interpretation that Black relates so uncritically, however, deserves closer scrutiny. The charge that the Nuche “relieved their frustrations with deliberate assaults upon the resources of the region” squares poorly with ethnographic evidence regarding the high esteem in which Utes held the natural world. Perhaps more importantly, it contradicts a subsequent statement by Grand County Commissioner Wilson Waldron, who boasted in 1880: “Game of all kinds is plenty and more numerous than it has been for years.”⁵³ Accusations attributing the exceptionally large and fierce fires that erupted throughout the Colorado Rockies in the summer of 1879 also seem overwrought. As fire ecologist William L. Baker points out, whites repeatedly charged Indians with setting the forests ablaze. Yet the newcomers only witnessed Indians igniting fires on a very small number of occasions.⁵⁴ The Utes used seemed to have used wildfire quite rarely, particularly in subalpine forests. Moreover, whites remained almost entirely ignorant of lightning as a major source of ignition in Rocky Mountain forests until the 1920s.⁵⁵ Whatever the truth of the matter, the stories of Utes turning against their native environments told by whites served a critical rhetorical purpose for the Americans: Such narratives cast the Utes as unworthy stewards of the land—dangerous and depraved nature-

⁵³ A Grand County commissioner, to give just one example, reported from Grand Lake in 1880: “Game of all kinds is plenty and more numerous than it has been for years.” Wilson Waldron paraphrased in *Colorado Miner*, July 17, 1880, p. 3.

⁵⁴ Black never offers any evidence to substantiate these accusations; he simply passes along the received wisdom that “many” of these fires were “obviously set” by Indians.

⁵⁵ William L. Baker, “Indians and Fire in the Rocky Mountains: The Wilderness Hypothesis Renewed,” in Thomas R. Vale, ed., *Fire, Native Peoples, and the Natural Landscape* (Washington, D.C.: Island Press, 2002), 53-57. Black’s description of “indiscriminate slaughter of game” seems more plausible, though accounts supporting the allegation of widespread game declines is lacking. The first authoritative censuses of Colorado game populations did not appear until the twentieth century, so Black clearly plucked from thin air the figures he relates—“perhaps half” of some animals, “nearly all” the remaining mountain bison. It is conceivable that the Utes, like the northeastern Algonquins Calvin Martin studied in his controversial *Keepers of the Game*, may have blamed animals for some of the predicaments in which they found themselves; alternately, the Nuche may have deliberately sought to deny settlers access to game they considered their own. Calvin Martin, *Keepers of the Game: Indian-Animal Relationships and the Fur Trade* (Berkeley and Los Angeles: University of California Press, 1978); Shepherd Krech III, ed., *Indians, Animals, and the Fur Trade: A Critique of Keepers of the Game* (Athens: University of Georgia Press, 1981).

destroyers whose removal from Colorado constituted an essential step in securing for the Rockies the sweet blessings of American progress.⁵⁶

The real explosion of Nuche resentment would not ignite until September, though, and its target would not be non-human nature, but the Americans. As one contingent led by the chiefs Jack and Colorow besieged a column of U.S. troops at the intersection of the Milk River with the reservation boundary, Utes at the White River Agency rose up. By the time the fighting stopped, the Indians had killed an unfortunate peddler, agent Meeker, and nine other agency employees; they also captured three women, including Meeker's wife, Arvilla, and his daughter, Josephine, and two children. The so-called Meeker Massacre or Ute War prompted a massive mobilization by the U.S. Army and Colorado militia. Most of the White River Utes consequently "scattered," attempting to avoid retaliation at the hands of Americans. The Uncompaghre leader Ouray, self-proclaimed chief of the Utes and a tireless advocate of peace and placation, no doubt understood that the White Rivers had given white Coloradans the pretext they needed to seek the immediate expulsion of all Nuche from the state. Ouray thus maneuvered with his wife, Chipeta, to save the lives of the five captives taken by the Nuche during their attack on the agency; he also tried to remind the Americans that only some Utes had participated in the conflict. But his entreaties fell on deaf ears.⁵⁷

⁵⁶ This portrayal of native peoples as wasteful, profligate, and unfit to fulfill God's command in Genesis 1:28 ("To be fruitful and multiply and fill it and subdue it") constituted a very old, powerful, and problematic narrative. It was also one that conservationists employed to great effect during the late 1800s and down to the present day. See Louis S. Warren, *The Hunter's Game: Poachers and Conservationists in Twentieth-Century America* (New Haven, Ct.: Yale University Press, 1997); Mark David Spence, *Dispossessing the Wilderness: Indian Removal and the Making of the National Parks* (New York: Oxford University Press, 1997); Karl Jacoby, *Crimes Against Nature: Squatters, Poachers, Thieves, and the Hidden History of American Conservation* (Berkeley and Los Angeles: University of California Press, 2001).

⁵⁷ Simmons, *Ute Indians*, 185-187.

In March of 1880, Ouray and eight other Ute leaders signed an agreement (Congress stopped signing treaties with Indian nations in 1871) that consigned the White River Utes to the Uintah Reservation in Utah. The Uncompaghres, meanwhile, were supposed to move to a reservation near the confluence of the Grand and Gunnison Rivers, around present-day Grand Junction. The commissioners charged with carrying out the agreement, however, quickly determined that the Uncompaghres should not be placed on the proposed reservation, but instead moved to Utah, too. Despite Ouray's efforts to conciliate the Americans, his band nonetheless faced removal beyond Colorado's borders, to a separate reservation south of the Uintah reserve.⁵⁸

Back in Middle Park, meanwhile, American troops remained on the alert through much of 1880 and 1881. Although the White River Nuche were finally led to their Utah reservation by soldiers in the summer of 1881, something like a quarter of the band remained on the loose, most of them presumably staying in their Colorado homelands. Government promises of annuities succeeded at bringing most of the stragglers in (predictably, such promises went largely unfulfilled). And though Northern Ute hunting parties would subsequently leave the Utah reservation to return to bag deer and other game in northwestern Colorado for years to come, Middle Park and the Kawuneeche Valley now lay well beyond their reach.⁵⁹

As the Americans had solidified their conquest of the Rocky Mountains, the Kawuneeche Valley's long history as a Nuche homeland came to a violent and tragic end. In the same pivotal year of the 1879 Ute War, meanwhile, a rush of prospectors poured into the valley, following fast upon the heels of the dispossessed Utes.

⁵⁸ On removal, see *ibid.*, 189-197; Peter Decker, *"The Utes Must Go!": American Expansion and the Removal of a People* (Golden, Colo.: Fulcrum, 2004), chs. 6-7.

⁵⁹ On Northern Ute ventures off the reservation and into western Colorado in the 1880s, see Simmons, *Ute Indians*, 204-206.

The Kawuneeche Rush

Even as the northeastern Utes were suffering through the travails of removal, prospectors had begun to discover silver, gold, and other minerals north of Grand Lake. By 1880, two mining districts had begun to take shape in the Kawuneeche. The first of these, the Campbell Mining District in Bowen Gulch (just west of Rocky Mountain Park's current western boundary, in an area long excluded from the Park because of its mineral deposits), was created in 1875 and centered at the town of Gaskill. The second, the Lead Mountain Mining District toward the headwaters of the Colorado River, was organized in 1880, one year after the incorporation of Lulu City.⁶⁰

Despite the enthusiasm of their promoters, neither mining district ever amounted to much. Doomed by a combination of low yields and heavy expenses to transport and refine the valley's ore, Gaskill lasted just six years and never boasted more than 100 inhabitants. For similar reasons, Lulu City endured less than five years with a maximum reported population of 500 (a figure that probably reflected the boosters' habit of doubling or even quintupling the number of people actually residing in the locales they hyped).⁶¹ Though short-lived, these mining camps and the work they supported would spur important changes in the Kawuneeche landscape--changes that stretched far beyond the nearly sixty pits, adits, shafts, and tunnels dug

⁶⁰ Susan Baldwin, *Historic Resource Study: Dutchtown and Lulu City, Rocky Mountain National Park, Colorado* (Boulder, Colo.: Creative Land Use, 1980), 14.

⁶¹ Black, *Island in the Rockies*, 278. The 1880 census recorded 417 residents in Grand County; an estimated 2,000 people inhabited the county just three years later, though the number of voters in the county had only grown to 416 in 1884. Population figures from *ibid.*, 278; *Proceedings of Grand County Board of Commissioners*, Jan. 8, 1885, book 1, pp 152-153. Buchholtz claims that Gaskill never housed more than 50. C.W. Buchholtz, *Rocky Mountain National Park: A History* (Niwot, Colo.: University Press of Colorado, 1983), 98.

and blasted into the valley and its slopes by prospectors and miners during the crest of the boom.⁶²

The rush began with the leakage of rumors from the valley's confines to the outside world. Promoters and capitalists hastened to enter the fray. Newspaper editors in Ft. Collins, Georgetown, Denver, and elsewhere, seeking to foster economic developments that might work toward their own towns' advantage, proved all too willing to abet the campaign of leading men in the Campbell and Lead Mountain districts to spin dreams of a gilded future for the remote valley along the stream then known as the North Fork of the Grand River.⁶³

The key figure in the formation of Lulu City, Benjamin Burnett, first heard of promising discoveries near the headwaters of the North Fork from fellow Fort Collins resident Joseph Shipler, who had begun prospecting on the flanks of the Never Summers (then usually referred to as part of the Rabbit Ear Range) during the 1870s. Burnett, his son Frank later recalled, next "sent out a prospector...to see if he could locate something worthwhile." The prospector, having "found some good-looking float" (particles of gold so light as to float on water) convinced Burnett to join his venture.⁶⁴

In the summer of 1879 Burnett relocated his family from Fort Collins to "a beautiful park" on the banks of the Grand. That same year, Burnett and William Baker, another Fort Collins resident who Frank Burnett claimed had "located a 160 acre ranch at the head of the Grand River," formed the Middle Park and Grand River Mining and Land Improvement

⁶² William Butler, *Historic Archeology of Rocky Mountain National Park* (Estes Park, Colo.: National Park Service, Rocky Mountain National Park, 2005), 1-3.

⁶³ For more on these particular boosters and booster narratives, see the numerous newspaper articles cited below. More broadly, see David M. Wrobel, *Promised Lands: Promotion, Memory, and the Creation of the American West* (Lawrence: University Press of Kansas, 2002); Barbara Lee Cloud, *The Coming of the Frontier Press: How the West Was Really Won* (Evanston, Ill.: Northwestern University Press, 2008), especially ch. 3.

⁶⁴ Baldwin, *Historic Resource Study*, 28; Frank Jones Burnett. *Golden Memories of Colorado* (New York: Vantage Press, 1965), 155.

Company. Soon thereafter, on the site Burnett and his family had camped, Baker and Burnett “got busy and laid out” Lulu City, the short-lived metropolis of the Lead Mountain Mining District. In the summer of 1880, after having surveyed and platted a rectilinear town grid of 100 blocks on nearly 160 acres of prime riparian meadow, Burnett turned promoting Lulu and the Lead Mountain Mining District. Within months, his efforts succeeded at generating widespread interest in the Kawuneeche's prospects.⁶⁶

Most notably, Edward Weber, a representative of Illinois capitalists, arrived just after the creation of Lulu City and “helped form the Grand Lake Mining and Smelting Company.”⁶⁷ This new enterprise quickly acquired the Wolverine Mine, located down the Valley from Lulu City in the Campbell Mining District. Weber’s firm next platted a 161-block town to house and service miners. Though Weber’s mine foreman, Lewis D. C. Gaskill, initially named the hamlet Auburn in honor of his hometown in New York state, the post office chose to name the site Gaskill, and it was the latter name that would stick.⁶⁸

Embellished reports celebrating the region’s incredible potential helped draw others to the North Fork. Boosters used journalistic mouthpieces to hype the potential of virtually every new claim filed, each prospect hole sunk. One characteristic newspaper article predicted a “brilliant future” for “the Grand Lake bonanzas” and even offered “advice to capitalists in quest of good investments.” In his 1876 guide for would-be Argonauts, Frank Fossett commented on the developing Campbell Mining District with similar hyperbole, proclaiming that “The fame of the Rabbit Ear range [then the name by which the Never Summer Mountains were known to Americans] is spreading abroad, and the rich silver deposits there will soon be producing

⁶⁶ Ibid., 155; Buchholtz, *Rocky Mountain National Park*, 93.

⁶⁷ Ibid., 93.

⁶⁸ Ibid., 93,

largely.”⁶⁹ Such reports, no doubt exaggerated, provoked considerable interest in Ft. Collins and Georgetown. The damning report of United States Commissioner of Mining Statistics, Rossitier Raymond, who had toured the area in 1876, offered a more sober and prescient appraisal. "Little can be said," he wrote, "except that the prospects are fair.”⁷⁰

Raymond's gloomy forecast notwithstanding, a steady force of miners was soon at work. In what was already a long-established western tradition, merchants, sawyers, teamsters, and saloon girls hastened to join them, each seeking in his or her own way to "mine the miners." Little demographic information on Gaskill or Lulu is available, since the towns expended most all of their short lives in the interval between the federal census of 1880 and the state census of 1885. Both settlements, though, almost certainly had imbalanced sex ration, with males predominating..⁷¹

“The Grand County mining fever," Robert Black reminds us, "inspired more than towns.” The boom “required an entire network of postal communications, [and] a system of routes that proposed to cope with the most improbable conditions of terrain and climate.”⁷² Whatever their age or occupation, the newcomers shared a desperate need for roads. Though as we shall see, participants in the Kawuneeche Valley mineral rush tried to meet their needs and desires for lumber, fuel, food, furs, and much else by exploiting local ecosystems, their lives nonetheless remained tightly bound to the outside world. The Kawuneeche’s mines and camps depended utterly on the conduits by which people, food, machines, minerals, animals, money, and

⁶⁹ Frank Fossett, *Colorado: A Historical, Descriptive and Statistical Work on the Rocky Mountain Gold and Silver Mining Region* (Denver: Daily Tribune Steam Printing House, 1876), 420.

⁷⁰ Rossiter W. Raymond, *Statistics of Mines and Mining in the States and Territories West of the Rocky Mountains being the 8th Annual Report* (Washington, D.C.: G.P.O., 1877), 319.

⁷¹ Elliott West and Rodman Paul note that “Mining camps were the most sexually imbalanced, diverse, and transient gatherings recorded in American history. Males typically comprised 80 percent or more of an early camp’s population; cases of 90 to 95 percent were not unusual.” *Mining Frontiers of the Far West*, 209.

⁷² Black, *Island in the Rockies*, 167.

information circulated between the valley and the wider world. From an environmental-historical perspective, the most significant of these conduits were the roads cut through the valley's forests and laid atop its meadows, streams, and passes during the boom.

The road network that emerged by the mid-1880s represented a hybrid of old and new. Some routes were built upon or old Indian trails, but others reflected a different cultural logic. The mining camps, after all, occupied sites that held no particular significance to previous inhabitants of the Kawuneeche. The road network that endured even after the boom went bust served to connect Lulu City and Gaskill not simply to each other, but also to Teller City (a small mining camp on the edge of North Park), Fort Collins, and particularly Grand Lake, which in turn was served by toll roads leading to Boulder via Rollins Pass, and the Clear Creek mining camps of Empire, Georgetown, and Idaho Springs via Berthoud Pass.

As early as July of 1875, the Grand County Commissioners made the existing route between "Campbell Mines" and Hot Sulphur Springs the first recorded county road in the Kawuneeche.⁷³ The town of Grand Lake took shape along this route, and soon supplemented its role as a summer tourist destination with the more steady business of supplying the mining districts in the North Fork Valley. To solidify Grand Lake's place as the supply center for the North Fork mines, a group of "Citizens of Grand County" petitioned the board of county commissioners in 1877: "The rapidly increasing interest and travel towards the extensive (Lode) Silver Mines in the Rabbit Ear Range," they complained, "[wa]s greatly retarded in consequence of the inferiority of the road to & from the mines." Cognizant that they held "equal claims on [the Board] in such matters in common with others," the petitioners asked the commissioners to

⁷³ Minutes, July 26, 1875, *Proceedings of Grand County Board of County Commissioners*, book 1, p. 9.

build a new road to the Campbell Mining District.⁷⁴ In June of 1879 the *Colorado Miner* subsequently reported the good news: “The North Grand Lake, North Fork and Rabbit Range Toll Road Company have a force of men at work on the road from here to the mines.”⁷⁵ The next month, an editorial in the *Fort Collins Courier* indicated that boosters of Larimer County were intent on building a road from the Larimer County seat, up Poudre Canyon, and into the Kawuneeche; the *Courier* predicted that if the valley “was opened up to the public, in twelve months a number of prosperous mining camps would be established, thus greatly adding to the business and prosperity [of] our county.”⁷⁶ A few months later, county commissioners received a petition asking them to build a road from the Campbell Mining District to the Fort Collins area.⁷⁷

It is not entirely clear which of these routes were located or constructed prior to 1880, at which point the creation of Lulu City and the Lead Mountain Mining District stimulated further efforts to extend transportation networks to the Kawuneeche. Lulu City initially lacked any passable road to the outside world—a shortcoming that both the camp’s residents, and businessmen in Grand Lake and Fort Collins were anxious to remedy.⁷⁸ Lulu residents successfully petitioned the county commissioners to create a road district centered in the camp, as well as to build a road up the North Fork from Grand Lake.⁷⁹ The commission responded by

⁷⁴ Petition, July 2, 1877, in *ibid.*, p. 37. See also Baldwin, “Historic Resource Study,” 21.

⁷⁵ “Grand Lake,” *Colorado Miner*, June, 21, 1879, p. 2.

⁷⁶ “Road to the Park,” *Fort Collins Courier*, July 10, 1879, p.2.

⁷⁷ The petitioners asked “for a road from the Rabet [sic] ear [sic] Mines to Larimer City.” Minutes, Oct. 7, 1879, *Proceedings of Grand County Board of County Commissioners*, book 1, p. 71.

⁷⁸ J. S. Perky, *Larimer County Homes and Mines – Where to Outfit for North Park and Middle Park Mining Districts* (Fort Collins: Courier Publishing Co., 1880), 15.

⁷⁹ Minutes, Aug. 27, 1880, *Proceedings of Grand County Board of County Commissioners*, book 1, p. 85.

dispatching “viewers,” who located a route on the east side of the North Fork that the commissioners duly approved.⁸⁰

Fort Collins, not to be outdone, intensified its efforts to build a road to Lulu. “Lulu people are glad,” reported the *Rocky Mountain News* on April 21, 1881, “to see that Fort Collins is aiding in the way of subscriptions for the opening of the toll road to Collins, for as soon as the road is well opened Lulu’s boom begins in earnest.”⁸¹ “Fort Collins,” another account noted, “is striving very hard to open the road between that place and Lulu so they can control the trade of Middle Park.”⁸² In mid-summer, after numerous delays, the road between Lulu and Fort Collins finally opened for business. By that point, plans were afoot to link the Kawuneeche Valley with Teller City, via the Wolverine Mine and Gaskill. This route was located and approved as a county road in 1882, and completed between Grand Lake and Teller was completed that year.⁸³ Together, the roads built into and through the Kawuneeche Valley in the late 1870s and early ‘80s integrated this previously remote stretch of country ever more fully into burgeoning regional, national, and international economic networks.

The workmen and entrepreneurs who emigrated to the on these roads counted on using the thoroughfares to import and export various goods for as long as they called the valley home. Just as crucially, they endeavored to do something the Nuche had never contemplated: to dig and blast holes into the ground in hopes of removing irregular veins and lodes of one kind of rock—what they called “ore”—from the other, comparatively worthless rock through which it

⁸⁰ Minutes, Oct. 8, 1880, *ibid.*, 88. The minutes actually speak of the route following the “North side” of the river, but I infer that this refers to the east side, as the approved version of the location makes no mention of bridging or fording the river in the course of the route from Grand Lake north.

⁸¹ *Rocky Mountain News*, April 21, 1881, p. 2.

⁸² *Colorado Miner*, June 11, 1881, p. 2.

⁸³ Minutes, Oct. 5, 1881, Jan. 12, 1882, April 10, 1882, July 3, 10, 31, 1882, Aug. 25, 1882, *Proceedings of Grand County Board of County Commissioners*, book 1, pp. 122, 130, 148, 163, 165, 168-69, 177. The route was intended to extend all the way to the Wyoming line, but only the Grand Lake-Teller City seems to have been built.

coursed. The ore that workers removed still required additional mechanical and chemical processing to isolate the silver or gold it contained. In the cool calculations of the capitalist system governing the American mining industry, one fact reigned supreme: if the value of the precious metals produced by a mine or mining district surpassed the total costs required to mine, mill, transport, and smelt ore, then the Kawuneeche's mines would flourish. If, on the other hand, the expense of turning buried minerals into bullion exceeded the benefits, then the mining boom would inevitably go bust. The fate of the Campbell and Lead Mountain Mining Districts thus rested on two vexing questions, the answers to which remained clouded by manifold uncertainties and contingencies: How much gold, silver, and other paying minerals did the highly variable underground deposits of the Kawuneeche contain? And what would it cost to get the precious metals out?

Newspaper accounts used ample statistics to document mining's progress in the Kawuneeche, as if the surety of numbers could compensate for the maddening unknowns looming over the camps. "The work of developing the Wolverine lode is steadily pushed ahead," reported Georgetown's *Colorado Miner* in July, 1880 of the Kawuneeche's largest and most promising mine, "and with excellent success. They have at present, a force of 20 men at work. The width of the crevice, between walls, is from 4 ½ to 5 feet and they have 18 inches of a pay streak. A chunk of ore, weighing some 60 pounds, was brought over and tested, which averaged 125 ounces of silver." A month later, a second article in the *Miner* claimed that "Mr. Hornbrook has run a tunnel about seventy feet and struck the crevice of the Hidden Treasure lode, Rabbit Ear range, which shows fourteen inches of gray copper ore which assays upwards of 200-ounces of silver per ton."⁸⁴ Those who reported on mining activity in the Kawuneeche counted on a barrage of numerical details—some of them reflecting actual truths, others mere buncombe—to

⁸⁴ *Colorado Miner*, July 24, 1880 (first quote); *ibid.*, Aug. 14, 1880, p. 3 (second quote); *ibid.*

stoke the hopes of readers that mining was proceeding rapidly and in quantity, and that the valley's ores were destined to pay.

Beyond a shared faith in the power of numbers to convey the scale and scope of the miners' industriousness and the mining companies' promise, the folks who participated in the Kawuneeche Valley mineral rush shared two other assumptions about the landscapes to which they had rushed in. First, they tended to view the environment as a set of discrete resources whose highest use was to be transformed into commodities and exchanged for other goods in larger markets rather than being traded or used by those who produced them. And second, newcomers to the valley expressed faith that the application of human labor and capital, far from sullyng the wilderness, would actually improve upon raw nature by bringing out the land's latent—and hitherto wasted—potential.⁸⁵

Though travelers, farmers, and the occasional panel of judges had begun to raise the alarm about mining's environmental impact elsewhere in the West, there is little evidence that miners, settlers, or travelers to the Kawuneeche Valley worried about the deleterious effects of the rush upon the region's landscapes and ecosystems.⁸⁶ Powerful, ear-thumping blasts of

⁸⁵ On the prevalence and force of these ideas in the nineteenth century, see William J. Cronon, *Nature's Metropolis: Chicago and the Great West* (New York: Norton, 1992), and Benjamin Cohen, *Notes from the Ground: Science, Soil, and Society in the American Countryside* (New Haven, Ct.: Yale University Press, 2009)..

⁸⁶ Literate travelers such as the English adventurer, Isabella Bird, often reacted to Colorado's mining landscapes with alarm and scorn; "agriculture," Bird declared in her 1873 travel narrative, "restores and beautifies, mining destroys and devastates; turning the earth inside out, making it hideous, blighting every green thing, as it usually blights man's heart and soul." Even some mining engineers seemed to regret at least some of the environmental impacts of their industry; "the operations of the miner," declared the unknown author of an 1876 article from *The Engineering and Mining Journal*, "are always attended with more or less damage to the land." Isabella Bird, *A Lady's Life in the Rocky Mountains*. New York: G.P. Putnam's Sons/The Knickerbocker Press, 1893), 225; *Engineering and Mining Journal*, Apr. 15, 1876, 365. And, in the 1884 case of *Woodruff v. North Bloomfield*, the California Supreme Court had banned hydraulic mining altogether because of the damage it caused farmers downstream. Robert Kelly, *Gold vs. Grain: The Mining Debris Controversy* (Glendale, Cal.: Arthur H. Clark Co., 1959). More generally, see Duane A. Smith, *Mining America: The Industry and the Environment, 1800-1980* (Lawrence: University Press of Kansas, 1987).

powder and dynamite sounded sweet to the newcomers. An awkwardly worded item in the *Colorado Miner* reported that “Every miner and laborer now have [sic] employment, who heretofore have been lounging around undecided what to do, for their winters’ grub stake, now can be found at work in the Wolverine, Silent Friend, or Grand Lake lodes, and the reports that can be heard here that sound like distant thunder although 12 miles away tell that they are not idlers.” The next year, blasting at Lulu City—which the *Miner* claimed could “be heard at any hour of the day” as far away as Grand Lake—joined the chorus from the Campbell District. Even in 1884, by which point mining activity in the Kawuneeche had slowed noticeably, a letter to the *Fort Collins Courier* boasted: “There are but six of us here at present, but we make the woods ring, as we get off from 15 to 18 blasts per day.” What later critics of mining would denounce as “noise pollution,” and what contemporaries hailed as the tocsin of progress, had become a daily feature of life in the Kawuneeche, with unknown consequences for the valley's fauna.⁸⁷

⁸⁷ *Colorado Miner*, Nov. 8, 1879, p. 3; *ibid.*, Sept. 18, 1880, p. 1; *Fort Collins Courier*, Nov. 18, 1880, p. 2; *ibid.*, Sept. 4, 1884, p. 1. For a list of references on the effects of noise pollution (particularly aircraft noise) on wildlife, see Noise Pollution Clearinghouse, “Fact Sheet: Noise Effects on Wildlife,” <http://www.nonoise.org/library/fctsheet/wildlife.htm> (accessed August 11, 2011). See also Paolo Laiolo, “The Emerging Significance of Bioacoustics in Animal Species Conservation,” *Biological Conservation* 143 (July, 2010), 1635-45.



Mine tailings, Lulu City trail, 1955. Roughly seventy years after the mining boom went bust in the Kawuneeche, evidence of environmental impact of mineral extraction was still plain to see. Photographer unknown, catalog #10-D-008, RMNP Photo Collection.

As journalistic paeans to blasting indicated, the people of the mining camps wanted to believe that the valley's economic potential was inexhaustible, its sublimity incorruptible. In several letters to area newspapers, correspondents from the Kawuneeche praised the valley as abundant, healthful, and amply blessed with everything American miners and settlers could desire. One characteristic passage intoned:

All appears to be quiet and comfortable at Lulu. There can be no healthier place or climate than in this Grand river gulch. The weather is warm and pleasant,

altho' we have heavy snow storms. Yet the air is not cold. We are protected from the hard wind storms by the heavy timber and the mountains which surround us. This is truly the most beautifully situated mining camp I have ever seen or heard of.⁸⁸

Another letter bragged:

There are many advantages here that many other mining camps are deprived of; first, the beautiful, fertile valley lying so near, where thousands of tons of native hay grows that can be delivered to the mines for a mere trifle compared to most of camps; next is the saw timber, the finest the Colorado produces, right where it will be needed without freight to add an expense of \$10 or \$20 per thousand; 3rd, timber for cord wood and charcoal is without end.... The weather is beautiful, the nights are somewhat frosty, the days could not be more pleasant in any land.⁸⁹

By portraying themselves as sold on the North Fork mining camps, these writers hoped to sell others on the valley—and thus to precipitate the kind of full-blown boom that could bring East Coast investors and railroads, opera houses and schools, wealth and civilization. In mapping out a geography of desire, boosters sought to minimize the valley's demerits—"the air is not cold"—while depicting the Kawuneeche as a storehouse of those things they believed their readers most coveted in a townsite: fertility, availability, healthfulness, and, not least, beauty.

⁸⁸ "Letter from Lulu," *Fort Collins Courier*, February 10, 1881, p. 2.

⁸⁹ "Middle Park," *Colorado Miner*, November 8, 1879, p. 3.



Lulu City, Kawuneeche Valley, n.d. This photograph, apparently taken after the North Fork mining districts entered terminal decline, captures many of the natural features that participants in the rush found so enticing. The healthy willow thickets at bottom right give way around old cabins to meadow. The valley's forests appear quite thick, and the clouds and sharply rising valley walls visible in the background hint at the sublimity some discerned in these high country fastnesses. F. T. Francis photograph, catalog #10-F-7, negative #2711, album #4015, RMNP Photo Collection.

As journalists and correspondents enumerated the valley's promise to would-be miners and homemakers, they also waxed eloquent about the wonders of God's creation. A traveler wrote in the *Rocky Mountain News*, for instance, that miners in the Kawuneeche were "enthusiastic in their admiration for the mountain scenery, and say that the water of the Grand is so pure that it is impossible to drink Fort Collins ditch water afterwards."⁹¹ By denigrating

⁹¹ *Rocky Mountain News*, August 12, 1880, p.2.

improvement's consequences on the Colorado Piedmont, this writer extolled the Kawuneeche's pristine qualities. A letter to the *Fort Collins Courier* from the Grand River mines, meanwhile, portrayed the valley as a landscape permeated by fearsome, glorious might:

the grand sight of a thunder and snow storm combined, on the continental divide. It was sublime beyond the poor ability of your correspondent to describe; but the continuous flashes of lightning and the constant roar of God's artillery, together with the majestic grandeur and forbidding aspect of the dark clouds as they gathered over and swept past the phantom looking spires and imaginary belfrys [sic] of the volcanic regions left an impression on my mind that will not soon be eradicated."⁹²

By representing the Kawuneeche as sublimity incarnate, this writer, like other authors, cast the valley as a formidable redoubt of the Creator's raw omnipotence. Neither the craggy mountains nor the tempestuous weather seemed susceptible to improvement or destruction. Unsullied and incorruptible, such discrete elements of the natural world served as microcosms of Nature writ large, embodying the power and the glory of God.

⁹² "Lulu City," *Fort Collins Courier*, July 15, 1880, p. 2. Like most westering Americans, the author of this particular letter tended to compare the Kawuneeche's natural features with famous monuments of human history. "The volcanic region," he wrote, "would no doubt inspire one who is poetic. They make one think of the ruins of the old castles of Petrea and the Holy Land, or the ruins of the Aztecs on our own continent." Some literate settlers and travelers, in short, portrayed the valley as boundless in potential and invested with the outward signs of an imagined history that reached back alternately to Tenochtitlan or even to the very birthplace of Christendom. For more on such comparisons, see Alfred Runte, *National Parks: The American Experience*, 4th ed. (Lanham, Md.: Taylor Trade Publishing, 2010), ch. 4, "The March of Monumentalism."

The mining rush, in short, had the curious effect of introducing the fundamental premises of a wilderness ideal that would go on to play significant roles in the area's subsequent history as part of Rocky Mountain National Park.

It is easy to focus upon the divergence of sublimity from improvement as abstract ideas—one cast humans in a starring role in a narrative of progress from raw wastefulness to ordered development, while the other presented the Kawuneeche as essentially perfect. Yet despite their striking differences, both of these ways of making sense the Kawuneeche nonetheless shared a fundamental similarity: Neither body of thought engendered much concern or regret regarding the mineral rush's environmental impacts. Improvement cast such changes as benevolent and progressive. Sublimity cast them as minute, fleeting, and incapable of detracting from the awesome wonders unfolding in the heights and heavens above. Neither perspective, as future events would reveal, offered the inrushing Americans a viable lens through which to make sense of the ecological changes their arrival in the Kawuneeche were unleashing.

The Environmental Impacts of Mining

Ideologies could provide rhetorical cover for environmental change, but they could not entirely obscure the material transformations that the mineral rush brought to the valley. The environmental effects of mining were most evident in and around Lulu City and Gaskill. In both the Lead Mountain and Campbell districts, surveyors hastened to mark off mining claims and townsites according to the dictates of federal land and mining laws. Stakes, benchmarks, and other means of establishing property boundaries work literally mapped American political, legal, and economic institutions onto parts of the Kawuneeche Valley, thus incorporating the valley into a nation premised upon the creation, protection, and transfer of private property rights.

Once settlers established title to claims and townsites, these portions of the public domain became private—and thus subject to exchange in the West's tumultuous markets for mining properties and town lots.⁹³

A newspaper article boosting Gaskill succinctly described what newcomers to the Kawuneeche looked for when locating towns: "Proximity to the mines," of course, but also a site "surrounded by hundreds of acres of good meadow land, good water and timber."⁹⁴ As this and other descriptions of the miners' desiderata suggested, the environmental transformations mining initiated extended well beyond the mines and towns to affect the public lands enveloping the North Fork mining districts.⁹⁵ Grassland, stream, and forest each had a critical role to play in sustaining mining and mining laborers. By and by, most every aspect of the Kawuneeche environment would come to bear some mark from the rush. At the same time, the environmental effects of mining remained far less severe than they would have been had the industry actually succeeded in the Lead Mountain and Campbell Mining Districts.

The domesticated animals that the newcomers rode or drove into the Kawuneeche offer a useful point of departure for exploring the ecological changes mining would bring to the valley. The Kawuneeche mineral rush was an animal-powered affair in at least two important ways. First, participants in the rush, like virtually all Americans of the late nineteenth century, needed large quantities of motive power to unlock the Kawuneeche's hidden wealth; they obtained this power primarily from the muscle power of horses, mules, donkeys, and oxen. These working animals bore riders and packs; they also pulled wagons, sleighs, plows, and other contraptions.

⁹³ Brosnan, *Uniting Mountains and Plain*.

⁹⁴ *Colorado Miner*, March 19, 1881, p. 8.

⁹⁵ Black notes that more than 60 townsites were surveyed during this time period. Black, *Island in the Rockies*, 167. Commodification has long featured centrally in environmental history. See, in particular, the works of William Cronon: *Nature's Metropolis* and *Changes in the Land: Indians, Colonists, and the Ecology of New England* (New York: Hill & Wang, 1983).

However people worked livestock, the animals provide a source of energy miners and others used to perform more work in less time; draught, pack, and riding animals, for instance, helped participants in the mineral rush to travel greater distances with larger loads much faster than would have been possible through manpower alone. Some livestock played critical roles in enabling frontier folk to move matter between a number of ecosystems and markets, other animals were destined to perform a second and more elemental role: to become food, and thus to fuel the metabolisms of miners and townsfolk alike.

Whether livestock were destined to appear on the table or not, Americans tended to conceive of a domestic animal much like a mining claim—as a species of private property. Livestock were too valuable and useful, predators too numerous and formidable, and the valley environment too unfamiliar and inhospitable, for frontiersfolk to have felt very comfortable allowing their animals to roam freely for long periods of time. Instead, they presumably kept close tabs on the valuable creatures, which probably meant that the animals' feeding habits had particularly intense effects on the areas in and just outside of Lulu and Gaskill. The Kawuneeche remained far too remote for anyone to have contemplated importing feed for their creatures; instead, livestock owners had to sustain their animals on the plant foods growing wild within the valley. No one seems to have recorded the ecological effects of livestock grazing in the valley during the mineral boom, but it seems likely that horses, mules, cows, and other domesticated creatures would have compacted soils near Gaskill and Lulu (especially along streambanks), introduced invasive species, reduced the competitiveness of native grasses that had evolved largely under conditions of extensive rather than intensive grazing, and subjected young tree shoots to grazing.⁹⁶

⁹⁶ Relevant studies include Warren P. Clary and John W. Kinney, "Streambank and Vegetation Response to Simulated Cattle Grazing," *Wetlands* 22 (2002), 139-48; J. W. Bartolome, "Impacts of

The Americans, unlike the Nuche, also tended to keep their animals in the mining districts year-round. As snow piled up, it eventually buried most of the grass and browse that had flourished between spring and fall. Domesticated animals would have perished in the Kawuneeche if their owners had failed to feed them during the long cold season. For this reason, participants in the mineral rush badly wanted hay, as we have already learned from newspaper depictions of the Kawuneeche. Like generations of American colonists before them, the people who came to the Lead Mountain and Campbell districts thus inspected the Kawuneeche's meadows with anxious and generally approving eyes.⁹⁷ One settler boasted to the *Colorado Miner* of "the beautiful, fertile valley lying so near, where thousands of tons of native hay grows that can be delivered to the mines for a mere trifle compared to [other] camps."⁹⁸ Another bragged: "We have a great advantage over some of our best mining camps, in the way of making hay.... There can be, without exaggerating, from two thousand to five thousand tons of hay put up through the summer season between Lulu and Hot Sulphur Springs."⁹⁹ In very rough figures, this was enough to feed between roughly 275 and 700 cows through the winter, or an even larger number of horses and smaller stock.¹⁰⁰ If these estimates are at all accurate, then domesticated animals now stocked the Kawuneeche at levels that far exceeded those witnessed

Grazing Intensity and Grazing Systems on Vegetation Composition and Production," in *Developing Strategies for Rangeland Management* (Boulder, Colo.: Westview, 1984), 917-25; Andrea C. Mayer and Veronika Stöckli, "Long-Term Impact of Cattle Grazing on Subalpine Forest Development and Efficiency of Snow Avalanche Production," *Arctic, Antarctic, and Alpine Research* 37 (2005), 521-22.

⁹⁷ See Brian Donahue, *The Great Meadow: Farmers and the Land in Colonial Concord* (New Haven, Ct.: Yale University Press, 2004).

⁹⁸ "Middle Park," *Colorado Miner*, November 8, 1879, p. 3.

⁹⁹ "Letter from Lulu," *Fort Collins Courier*, February 10, 1881, p. 2. This equates to roughly 2,000 to 5,000 acres of meadowland, since later homesteaders typically got around 1 ton of native hay per acre of meadow.

¹⁰⁰ This is based on the following figures: 40 pounds of hay per cow per day (based on present-day estimates for cattle in Ohio, and thus perhaps a maximum amount for the smaller and less well-fed beef cattle of the 1880s, Andrea Zippay, "Feeding Beef Cows during Winter Months Can Tear Up Farm Budget Book," *Farm and Dairy* [Aug. 8, 2002], online at: <http://www.farmanddairy.com/news/feeding-beef-cows-hay-during-winter-months-can-tear-up-farm-budget-book/748.html> [accessed August 14, 2011]) for six months each.

even at the zenith of Nuche equestrianism, when the Utes probably fed about one hundred horses on the valleys grasses during portions of the summer and fall.¹⁰¹

As the newcomers set about turning native meadows into neat bales of hay, they effectively siphoned off calories and nutrients from lush riparian grasslands and directed them to the mining camps. Some of these calories and nutrients would eventually make their way into the bodies of miners and townsfolk. But the settlers were not content to live off of their herds alone. Like their contemporaries in other western mining camps, they eagerly consumed processed foods preserved in cans, sacks, boxes, and barrels hauled by animal-powered wagons from railheads at Georgetown, Boulder, Fort Collins, and elsewhere. The camps also provided a lucrative market for truck gardeners such as J. H. Hedrick, one of the first men to file a claim to land in the Kawuneeche under the Homestead Act of 1862. The *Grand Lake Prospector* described Hedrick in 1886 as "making a success of vegetable growing on his ranch between here and Gaskill."¹⁰² Some miners and townspeople even consumed wild plants, particularly the berries and currants that flourished in the many stretches of the valley that had burned in the large wildfires of the 1870s and '80s.¹⁰³

Plant foods cultivated or gathered in the Kawuneeche, though, almost certainly made a smaller contribution to the diets of miners and townsfolk than game and fish taken from the valley and surrounding areas. Wild animals were sometimes killed by professional hunters, but more often by the settlers themselves. An 1879 article in the *Colorado Miner* proclaimed the Kawuneeche a "paradise of sportsmen and fishermen"; the silver boom placed this paradise at risk, as hungry miners joined anglers and hunters in declaring a protracted and unregulated open

¹⁰¹ Figure based on estimates presented in chapter 1 that Ute family groups typically would have numbered around 50, and John Ewers data regarding Ute ownership of about 2 horses per person.

¹⁰² *Grand Lake Prospector*, July 31, 1886, p. 3.

¹⁰³ Mrs. Macfarland-Hightower to Mr. Tom Thomas, Feb., 1968, Ferrell Atkins Files, RMNP Archives.

season upon the creatures of forest, stream, and tundra.¹⁰⁴ Most of those who rushed into the valley undoubtedly shared George Crofutt's wonder: "The mountains are alive with game of all kinds, and the stream with fine trout."¹⁰⁵ The newcomers killed elk, deer, and other animals for both their own sustenance and to sell or trade at market. Mrs. Macfarland-Hightower, granddaughter of Lulu founder Benjamin Burnett, declared that: "Pioneers in golden Colorado were in a veritable Garden of Eden when it came to stocking the cuisine." Lulu City's lone hotel, Macfarland-Hightower claimed, served "pheasant, deer, [and] sage hen . . . in abundance. Hot cakes and bear steaks for breakfast" and "trout for lunch."¹⁰⁶ A contemporary item from the *Fort Collins Courier* corroborates Macfarland-Hightower's recollection of an apparently ceaseless feast on the bounty of the valley's wild ecosystems; a Lulu City correspondent detailed a "splendid dinner, to which forty-three hungry miners sat down and filled up, from the following; Bill of Fare: SOUP – A la elk track (with bean in it); FISH – Mountain trout; MEATS – Mountain sheep steak, Quail on toast, Shoulder of blacktail deer with onion dressing, Mud lark fried, boiled and fricasseed, Hind quarter of Missouri chicken, boiled." Of the menu items that no doubt had *Courier* readers licking their lips, only the beans, the flour, and probably the "Missouri chicken" (most likely some kind of prairie chicken or other wildfowl) for the toast had

¹⁰⁴ *Colorado Miner*, August 23, 1879, p. 2.

¹⁰⁵ George Crofutt, *Grip-Sack Guide of Colorado* (Omaha, Neb.: The Overland Publishing Co., 1881.), 116.

¹⁰⁶ McFarland-Hightower to Thomas. Macfarland-Hightower claimed that these were "Colorado's famed rainbow trout," but she was probably wrong in this regard. There is no evidence that stocking of exotic rainbows had yet begun in the Kawuneeche, though it is not impossible; in January, 1884, the Grand County Board of Commissioners "ordered that Mr. Campbell be authorized to take steps to stock the streams of North Park with trout, the county paying for transportation and distributing." *Proceedings of Grand County Board of County Commissioners*, book 1, p. 248. The *Proceedings* make no further mention of this scheme.

to be shipped in by wagon; everything else served on the menu could have been harvested from the Kawuneeche Valley and Middle Park.¹⁰⁷

Mining-camp residents clearly derived no small pleasure from feasting on the Kawuneeche's toothsome creatures. But they also sought to eliminate those animals they viewed as "nuisances." Consider the great massacre of American pine marten that unfolded one snowy January day in Gaskill. According to the memoirs of Charles Hedrick, son of truck farmer J. H. Hedrick and a long-time resident of the Kawuneeche, "someone gave the alarm that the town was full of marten," *Martes Americana*—a small carnivorous member of the weasel family that is roughly the size of a mink. "Everyone got excited," Hedrick recalled. "The townsfolk "ran to see what was going on. In a snowbound little town like that anything that promised some excitement was welcome. ... You could see martens running in all directions," two or three hundred in all. If the camp's residents owned guns, they evidently determined that firing at the long, skinny predators was bound to do little good. Instead, most of Gaskill's residents simply grabbed the nearest large blunt object and "attacked the marten while they were running across the streets and over the cabins and jumping from tree to tree." Hedrick does not say how long the frenzy lasted, nor did he speculate about its causes. He did note that townsfolk eventually succeeded in killing about twenty marten, and presumably many more were seriously wounded.¹⁰⁸

Hedrick's account prompts no shortage of intriguing questions: Was Hedrick telling a tall tale, or did this event actually take place? What could possibly have led so many marten to congregate in one place, let alone to invade a center of human population? And how should we interpret the response of Gaskill's residents? Did they seek to bludgeon the marten because an

¹⁰⁷ "Lulu City." *Fort Collins Courier*, July 15, 1880, p. 2..

¹⁰⁸ Charles Hedrick, "Memoirs of Charles Hedrick, 1874-1950," unpublished mss., RMNP Archives, pp. 2-3.

exceedingly strange natural phenomenon—the appearance in a human settlement of a couple of hundred wild creatures not known for their sociability or boldness—triggered a primal fear of the natural world’s enduring power? Were they attempting to capitalize on the unusual propinquity of large numbers of fur-bearers whose pelts they knew would bring a healthy price at market? Or might they even have been attacking marten as an unconscious way of alleviating the boredom, frustration, uncertainty, and tension that pervaded life and work in a remote, winter-bound mining camp? Hedrick’s memoir unfortunately offers no real insights on these questions, and no other historical source makes any mention of the incident.

Whether fact, fiction, or some hybrid thereof, the Gaskill marten massacre fit snugly into the larger context of a frontier culture whose constituents spent considerable time, energy, and ingenuity in efforts to eradicate predators.¹⁰⁹ Early sources on the Kawuneeche make almost no mention of wolves and coyotes, a curious omission given the origins of the name Kawuneeche in Arapaho names based on these two canine species. Better documented are the campaigns settlers waged against bears and mountain lions.

Still standing in the decaying remains of Lulu City is an old bear-trap which dates to the 1880s, a relic from an era in which newspapers carried numerous stories glorifying the exploits of bear killers. The *Miner*, to cite just one example, told of a reporter’s visit to the cabin of a settler “who lives the life of an anchorite in the pleasurable occupation of bear catching. . . . On every hand were unmistakable evidences that the objects of his pastime were numerous and vigorous. Bear tracks, bear wallows and bear scratches were painfully prevalent.”¹¹⁰ Together, the bear trap and this account of “bear catching” suggest that bears were sometimes taken alive,

¹⁰⁹ For a probing, thought-provoking examination that combines biology, folklore, and history, see Jon Coleman T., *Vicious: Wolves and Men in America* (New Haven, Ct.: Yale University Press, 2004).

¹¹⁰ *Colorado Miner*, August 30, 1879, p. 3.

then either killed, or perhaps even used in the blood sports popular in many western mining camps.¹¹¹

If trapping predators struck one journalist as a “pleasurable occupation,” it also struck nineteenth-century Americans as an essential part of civilizing the West. Indeed, newspaper accounts of the Kawuneeche frequently portrayed bears and mountain lions as threats to the settlers’ tenuous control over the valley. An 1881 item in the *Fort Collins Express* noted that “Bears, of the most approved ferocity, are at all times within call, you might say”—clear evidence to contemporary readers that the Kawuneeche remained a rugged, wild, untamed country.¹¹² Three years later, as the rush waned, an article in the *Miner* hid alarm about mining’s failure beneath a tongue-in-cheek account of resurgent predators taking back the valley’s largest human settlement: “Much anxiety is felt for the safety of the mines at Lulu. Since the departure from there of Judge Godsmark and some more of the old timers, the bears and mountain lions have taken possession of the boys’ houses and old gumboots, and are running a municipal government of their own, to wit, using all their efforts to restore Lulu to its primeval status.”¹¹³ Ten years earlier, during a brief thaw in Nuche-settler conflict, the *Miner* had likened the Utes to bears; in 1884, the same paper anthropomorphized bears and mountains lions in order to point out the tenuous nature of white settlement in the valley. With many of Lulu’s longstanding citizens abandoning the camp, it seemed, the town lay vulnerable to a *coup d’état* in which bears and cougars moved into miners’ cabins, donned boots, and assumed the reins of power.¹¹⁴

¹¹¹ Indeed, bull and bear fights briefly spread east from California to St. Joseph and St. Louis, Missouri; “A Bear and Bull Fight,” *New York Times*, Jan. 2, 1868.

¹¹² *Fort Collins Express*, July 21, 1881, p. 2.

¹¹³ *Colorado Miner*, January 5, 1884, p. 3.

¹¹⁴ All of these observers tended to see sinister designs in bears evident tendency to lurk at the fringes of human settlement; such behavior, though, almost certainly reflected bears’ widely-observed fondness for trash.

Like bear tales, angling narratives tended to emphasize the wild plenitude of the Kawuneeche—with the crucial difference that when people assumed the role of predator instead of prey, abundance became a good thing indeed. While later anglers in the Colorado would compare notes about the length and weight of the individual fish they caught, their counterparts in the 1880s focused more on the sheer number of trout settlers caught with ease and consumed with abandon. Frank Burnett claimed that fish in the North Fork of the Grand River were so naïve that "you could catch trout with red flannel on the hook."¹¹⁵ J. E. Shipler, already described as "an old miner" in an 1880 booster volume, claimed that he had taken as many as 583 fish in a single day in Middle and North Parks.¹¹⁶ "There are any quantity of trout here," crowed an article entitled "Lulu's Progress," before offhandedly mentioning that "Frank Stover ate 32 at one meal, and yet says he was a little off his appetite."¹¹⁷

The expansive appetites of Stover and his fellow newcomers must have combined with the prodigious hatreds of marten killers and bear trappers to cause substantial decreases in the populations of many of the species targeted by anglers, hunters, and trappers. Some fish and game populations in the Kawuneeche probably expanded as a result of Ute removal, a scenario lent circumstantial evidence by a 1880 proclamation of Grand County commissioner Wilson Waldren: "Game of all kinds is plenty," Waldren happily reported, "and more numerous than it has been for years."¹¹⁸ By the 1890s, elk seem to have disappeared from the Colorado River headwaters; trappers and hunters had also succeeded at eliminating the valley's last grizzlies and

¹¹⁵ Burnett, *Golden Memories of Colorado*, 158.

¹¹⁶ Perky, *Larimer County Homes and Mines*, 17.

¹¹⁷ "Lulu's Progress," *Fort Collins Courier*, July 29, 1880, p. 1.

¹¹⁸ Wilson Waldren, paraphrased in *Colorado Miner*, July 17, 1880, p. 3.

wolves.¹¹⁹ Many other species, though, either remained robust or recovered after the boom went bust; reports from Rocky Mountain National Park rangers from 1915 onward portrayed the populations of many mammals in the Kawuneeche as large and thriving.¹²⁰

Mines and mining camps had more direct environmental effects, too. Because repeated efforts to locate a smelter in the Kawuneeche all came to naught, the Wolverine Mine and other properties yielded large dumps, sorted into separate piles for ore and waste rock. Also left behind were rusting heaps of mine cars and rails, not to mention decaying mine and town structures, piles of empty tin cans, and other forms of refuse discarded by a population more committed to enriching themselves than to preserving the valley's ecological integrity or aesthetic appeal.¹²¹ Legend even has it that in their haste to leave Lulu, some townsfolk left behind clothing hanging in their cabin closets.¹²² The rush surely left its mark on the valley's waters, too. The absence of hydraulic mines or smelters helped the Kawuneeche avoid the devastation experienced in more profitable western mining regions.¹²³ Even so, mine drainage,

¹¹⁹ Certainly none of these species are mentioned in the extensive sources cited in the next chapter on this period, though no source offers precise dates for their eradication in the Kawuneeche *per se*.

¹²⁰ See ch. 4 and especially 5, below. The problem with this sort of evidence, of course, is that the comparative framework is far from ideal: people who came to the Kawuneeche later generally compared the situation in the valley not to its previous condition, but to their prior experiences in other places, many of which had already experienced quite heavy game and fish exploitation.

¹²¹ Butler, *Historic Archaeology of Rocky Mountain National Park*. Apparently the mines in and around the Kawuneeche were almost entirely unmechanized, lacking “even arrastras.” Many structures, trash-heaps, and other vestiges of mining remain on the Kawuneeche Valley floor. *Ibid.*, 120-121, 143.

¹²² MacFarland-Hightower to Thomas, Feb., 1968.

¹²³ Sources on the smelting and railroad projects relevant to the Kawuneeche include: “Home Matters,” *Fort Collins Courier*, September 25, 1879, p. 3; *Rocky Mountain News*, September 30, 1879, p.2; H.C., “Light for Lulu,” *Colorado Miner*, September 18, 1880, p. 1; “Middle Park Mining News,” *Colorado Miner*, April 29, 1882, p. 1; “Grand County, Middle Park Mining News,” *Colorado Miner*, September 16, 1882, p. 1; “Middle Park Mining News,” *Colorado Miner*, September 20, 1883, p. 1; Raymond, *Statistics of Mines and Mining*, 319; J. Alden Smith, *Report on the Development of the Resources of Colorado* (Denver: Times Public Printer, 1883), 49; *Colorado Miner*, December 31, 1881, p. 2; *Rocky Mountain News*, February 16, 1882, p. 3; Ansel Watrous, *History of Larimer County, Colorado* (Fort Collins, Colo.: The Courier Printing and Publishing Company, 1911), 243. For an overview of smelting’s environmental effects, see Smith, *Mining America*. On the significance of

untreated sewage from privies and outhouses, and effluents from domesticated animals almost certainly increased the loads of heavy metals, nutrients, and bacteria carried by the North Fork and its tributaries.¹²⁴

The mining boom probably inflicted the most sweeping and longest-lived effects, however, on the valley's forests. Town developers deliberately located both Gaskill and Lulu in meadows; both townsites nonetheless required the clearing of many trees. More significant was the mines' voracious demand for lumber and fuel. The shafts, tunnels, and galleries miners hacked out of the earth were inherently unstable spaces; only the introduction underground of large amounts of timber could protect the mines from deadly and expensive cave-ins. Miners and townsfolk used wood to construct homes and mine buildings; to heat homes, boardinghouses, stores, and saloons; and to power steam engines. Unlike trees used as mine timbers or fuel, which generally required only minimal processing, lumber intended for structural purposes usually had to be sawn to the desired dimensions. Entrepreneurs sought to meet this demand by building four sawmills in the Kawuneeche in the early 1880s. Two occupied unknown locations near Lulu City, a third lay on the future site of Green Mountain Ranch, and a fourth buzzed above Gaskill.¹²⁵ The first of these mills was up and running by summer, 1880;

smelting in Colorado, see Fell, *Ores to Metals*. Hopes for railroads and smelting plants died hard; as late as 1900, Joseph Shipler still remained hopeful that a "concentrating plant" would imminently be built near his mine. Butler, *Historic Archaeology of Rocky Mountain National Park*, 142.

¹²⁴ No long-term effects of mining on water-quality are mentioned in M. Alisa Mast, *Assessment of Historical Water-Quality Data for National Parks in the Rocky Mountain Network, Colorado and Montana, through 2004*, U.S.G.S. Scientific Investigations Report 2007-5147 (Reston, Va.: U.S.G.S., 2007), 59-75.

¹²⁵ On the remains of these and other sawmills in the Kawuneeche, see Butler, *Historic Archaeology of Rocky Mountain National Park*, 216. Primary sources on mining-era sawmills include: *Ft. Collins Courier*, February 19, 1880, p. 2; *Fort Collins Courier*, July 8, 1880, p. 2; *Rocky Mountain News*, July 15, 1880; *Colorado Miner*, September 18, 1880, p. 1; *Fort Collins Courier*, November 18, 1880, p. 2; *Denver Republican*, Jan. 1, 1881, p. 2; *ibid.*, Jan. 22, 1881, p. 2; *Colorado Miner*, June 11, 1881, p. 3; *Ft. Collins Express*, July 21, 1881 p. 2; *Colorado Miner*, April 15, 1882, p. 3; *Rocky Mountain News*, June 26, 1882, p. 3; *Colorado Miner*, March 31, 1883, p. 3; *Grand Lake Prospector*, July 18, 1885; *Colorado Miner*, March 19, 1881, p. 3.

the next summer, two mills, though reportedly "running night and day," could not "half supply the demand for lumber."¹²⁶ Shortages of sawed lumber persisted into the next summer; the *Rocky Mountain News* wrote that the valley's "saw mill can't supply enough lumber which is slowing construction."¹²⁷ Finally, in 1883, the installation of large steam-powered mills (described in one account as "getting in the finest lot of logs . . . ever seen at any mill in the State") enabled a writer for the *Colorado Miner* to predict: "There will not be a scarcity of building material this year."¹²⁸ Unfortunately, contemporary accounts provide virtually no detailed information on the species cut, the locations logged, or the overall quantity of wood consumed during the silver boom.

Perhaps the most destructive dynamic of the rush for riches in the Kawuneeche involved not lumbering but forest fires. In the Kawuneeche as in so many other parts of the West, the influx of miners seems to correlate with a substantial increase in fire frequency. Part of the problem was that the second half of the nineteenth century witnessed many droughty years when a combination of climatic factors combined to produce ideal fire weather. But people were also a critical part of the problem. Throughout the Rocky Mountain West, fire ecologist William L. Baker explains, "miners apparently set fires to expose rocks, but fires also escaped, as suggested by the spatial association of fire with mining areas and, in some cases, the occurrence of fires shortly after mining onset." It may be no coincidence that 1879, the year in which the Lead Mountain mining district was founded, and a time of intense activity in the Campbell district, saw fires destroy well over 1,500 acres of forest in the valley.¹²⁹

¹²⁶ *Colorado Miner*, June 11, 1881, p. 3.

¹²⁷ *Rocky Mountain News*, June 26, 1882, p. 3

¹²⁸ *Colorado Miner*, March 31, 1883, p. 3.

¹²⁹ On fire history in the Kawuneeche, see Jason S. Sibold, "Multi-Scale Subalpine Forest Dynamics, Rocky Mountain National Park, Colorado" (Ph. diss., University of Colorado at Boulder, 2005), 28, 41-42. On mining and forest fire, see William L. Baker, *Fire Ecology in Rocky Mountain*

Mining-related logging and fires spurred a spiral of secondary and tertiary effects. Water powered at least some of the sawmills built in the valley, and the construction of millraces, canals, and other waterworks undoubtedly changed elements of the local hydrology in ways that anticipated the later transformation of the Kawuneeche into an irrigated landscape.¹³⁰ Moreover, because logging removed the trees whose roots tended to hold the valley's fragile soils in place, it seems likely that the mining era witnessed increased erosion and higher sediment loads in the valley's streams. In the absence of the shade that living trees provided, winter snows almost certainly melted more quickly, which would have led to greater variability in streamflows. At the same time, though, logging and fires together would have created edge habitats, favored haunts for deer and other browsers.¹³¹

A photograph taken at the abandoned site of Lulu City in the summer of 1889 nicely captures the changes the influx of Americans had imposed on the Kawuneeche's forests.

Landscapes (Washington, D.C.: Island Press, 2009), 357. For relevant fire histories of the Colorado Front Range, see Thomas T. Veblen and Diane C. Lorenz, "Anthropogenic Disturbance and Recovery Patterns in Montane Forests," *Physical Geography* 7 (1986), 1-24 and Thomas T. Veblen and Diane C. Lorenz, *The Colorado Front Range: A Century of Ecological Change* (Salt Lake City: University of Utah Press, 1991). Baker notes that low-intensity livestock grazing generally tended to reduce fire spread and intensity, at least initially. Baker, *Fire Ecology in Rocky Mountain Landscapes*, 367-370.

¹³⁰ Butler, *Historic Archaeology of Rocky Mountain National Park*, 209, 216.

¹³¹ I draw most of this from studies of other regions; see especially Cronon, *Changes in the Land*, ch. 6.



Lulu, Grand River Valley, July 20, 1889. This photograph provides a view of forest conditions not long after the mining boom's collapse, with plenty of dead timber around Lulu, and generally thin forests growing on the slopes above. Call Number: X-12238, DPL Western History Photo Collection.

Though the destruction visible in this image pales in comparison to the near-total denudation depicted in photographs of more successful mining regions such as Leadville or Central City, the image's foreground nonetheless shows trees largely absent from Lulu City itself. No obvious patches of logged woodland appear in the photograph, though this may simply reflect the rough topography of this particular stretch of the valley. Dead standing timber, meanwhile, covers the lower slopes of the mountainside across the North Fork from Lulu, most likely as a result of the 1879 wildfire or a more recent conflagration.¹³³ This particular stretch of forest may have been burned over a decade or more previously, but it had yet to recover fully (though young pines

¹³³ The dead trees may also have been killed by mountain pine beetle, but there is no real way to tell from the photograph alone.

seem to be taking root toward the left edge of the print).

One last agent of ecological change in the Kawuneeche was the road network built to serve the mining districts. Each of the routes connecting Gaskill, Lulu City, Grand Lake, Fort Collins, and other places introduced significant alterations to the meadows, forests, and mountainsides it traversed. News accounts of road construction often employed metaphors of violence: “We are told that H.F. Studevart and party of fifteen or twenty men start for Lulu City on Saturday morning,” one 1880 article declared, with “the intention . . . to *cut* in a road.”¹³⁴ And indeed, each road required extensive clearing, digging, grading, and leveling—tasks generally performed from 1882 onward with teams of draught animals harnessed to the three plows and three scrapers Grand County commissioners had purchased that year for the use of the county road department.¹³⁵ At least some stretches of a few routes through the valley also required more elaborate kinds of construction, which tended to result in still more severe ecological effects; according to archeological evidence, for instance, one portion of the Grand Lake-Lulu City Wagon Road comprised a “corduroy” road, consisting of both whole and split logs laid side-by-side to facilitate passage over marshy terrain.¹³⁶ Most every road also needed bridges to cross the North Fork and other valley streams; the wood for these, like that lining corduroy roads, was felled from adjacent forests.

Roads remade the valley landscape in other ways, too. Cleared of vegetation and rocks, then worn by feet, hooves, and wheels to a level lying inches or even occasionally feet lower than the surrounding terrain, roads often offered paths of least resistance for running water. When the melting snows of late spring careened through the Kawuneeche, the routes built to

¹³⁴ “Off for Lulu City,” *Fort Collins Courier*, June 24, 1880, p. 3.

¹³⁵ *Fort Collins Courier*, July 22, 1880, p. 2; Minutes, Jan. 16, 1882, *Proceedings of Grand County Board of County Commissioners*, book 1, p. 131.

¹³⁶ Butler, *Historic Archaeology of Rocky Mountain National Park*, 59-112.

carry ore and other goods people, and animals into and out of the Kawuneeche sometimes turned into man-made rivers. Efforts to navigate waterlogged roads excised deep ruts that, in turn, filled with water in future seasons. Nell Pauly, a local historian of Grand Lake, colorfully evoked the enduring legacy of the region's muddy roads. Pauly described the old wagon route leading up the North Fork from the lake as a:

pair of deep ruts which wound in and out so crookedly they almost met themselves coming back, over permanent mudholes, through swamps, around or through beaver ponds, over rough corduroy patches of uneven poles because the so-called road was near the river. It was usually muddy, with black sticky mud knee-deep to horses and hub-deep to the high-wheeled wagons. It crooked around steep banks of washed-out earth.¹³⁷

As Pauly's account indicates, roads likely had their greatest ecological impact on riparian areas, which offered road builders gentler grades and stretches of meadow and grassland that were much easier to build through than the coniferous forests that often grew quite densely on the terraces and slopes above.

During the mining boom, people acted upon nature in a variety of ways—shooting and fishing, digging and blasting, harnessing and planting, burning and cutting. Yet no matter how hard they tried, miners and townsfolk never succeeded at freeing themselves from the harsh constraints nature imposed on the Kawuneeche. If we conceive of the mineral rush as a concerted attempt to subdue and control the natural world, in other words, then we also must

¹³⁷ Nell Donathan Pauly, *Ghosts of the Shootin'* (Grand Lake: privately published, 1961), 181.

recognize perhaps that perhaps the most significant outcome of the valley's brief flirtation with silver and gold was the absolute and utter failure of the boom. Looking at the enduring power of the natural world to structure human history in the Kawuneeche helps us to understand why.

For all of the hopes boosters heaped on the Campbell and Lead Mountain Mining Districts, the Kawuneeche remained weather-bound and isolated, particularly in comparison to the many Colorado mining regions that gained railroad service in the early to mid-1880s.¹³⁸ The rush, as we have seen, transformed the valley environment in several ways. Yet the influx of settlers could do nothing to blunt or shorten the valley's long, ferocious winters. Moreover, hauling goods into and out of the Kawuneeche remained expensive well into the twentieth century; as miners, prospectors, and capitalists understood all too well, the continuing need to transport freight and passengers via wagon or sleigh placed the equivalent of a heavy tax on all commerce into and out of Lulu City and Gaskill. Numerous schemes to extend rail lines to Grand Lake, several of which were projected to run through the Kawuneeche, repeatedly failed (though a branch of the Denver and Salt Lake Railroad did approach Grand Lake from its mainline through Granby in the early 1900s).¹³⁹ In the absence of railroads, plans for mills and smelters in the valley evaporated; without coal-powered transit lines, after all, building and operating facilities to refine the valley's ore remained prohibitively expensive.¹⁴⁰

¹³⁸ Excellent points of comparison are offered by the Leadville region, the San Juans, Aspen, Central City, Clear Creek County, and western Boulder County.

¹³⁹ On early and unsuccessful schemes, see Black, *Island in the Rockies*, 170-171.

¹⁴⁰ Andrews, *Killing for Coal*, ch. 2..



Old Miner's Cabin West of Skeleton Gulch Trail, 1986. This photograph suggests that the natural world has slowly reclaimed old mining ruins. In the process, it offers an allegorical view of the fundamental problem that undercut efforts to transform the Kawuneeche Valley into a major mining center: the valley posed formidable natural constraints, while its mineral deposits were simply too poor to justify the considerable efforts required to overcome isolation from railroad lines and smelting facilities. Jim Capps photograph, August, 1986, catalog #12-5-F-1.

In the final reckoning, however, the ultimate cause of the Kawuneeche mining bust probably had more to do with the benefits capitalists projected would accrue rather than the costs they knew they would incur in the process of developing the North Fork mines: Under then-prevailing technological, social, and economic conditions, the Kawuneeche's ores simply were not rich enough to repay miners and capitalists for their troubles.¹⁴¹ While it is possible that rail service or smelters might have altered this calculus enough that Kawuneeche mining companies might have been able to turn a profit, Colorado's smelting and railroad entrepreneurs generally proved quite astute in locating facilities. If anything, they built too much too quickly, with

¹⁴¹ As in most every western mining area, initial accounts of the ore's richness were greatly exaggerated.

profligate disregard for costs.¹⁴² Some of the mining districts railroads reached turned out to yield major bonanzas. Not a single mining district situated more than a few miles away from railroad connections, by contrast, ever produced substantial riches for long without attracting improved transportation facilities.¹⁴³

The failure of the Kawuneeche mineral boom thus reminds us of the continuing power of geology, climate, geography, and other aspects of the natural world to shape what human beings find desirable, profitable, and possible. Financial factors—particularly high transportation costs and the shortage of capital for mining and refining operations—undoubtedly played a roll in the failure of mining in the Kawuneeche. Every other major mining district in the West, however, faced similar problems during its early development. The fundamental difference between the North Fork mines and their more successful counterparts was, in the final reckoning, less an artifact of culture than of nature.¹⁴⁴ Had the Kawuneeche's mineral deposits proved more ample, the valley could have become another California Gulch (site of Leadville) or Clear Creek Valley (site of Georgetown).

¹⁴² Probably the best example of this is presented by the Denver & Rio Grande. See Robert Athearn, *Rebel of the Rockies: A History of the Denver and Rio Grand Western Railroad* (New Haven, Ct.: Yale University Press, 1962). More generally, see Richard White, *Railroaded: The Transcontinentals and the Making of Modern America* (New York: Oxford, 2011).

¹⁴³ Interestingly enough, Colorado possesses remarkably scarce low-grade ores of copper, iron, and other metals that could profitably be extracted using what historian Timothy LeCain rightly calls technologies of "mass destruction," particularly when compared to the copper regions of Arizona, New Mexico, Utah, and Montana, or the gold mines of Nevada's Carlin Trend. Timothy J. LeCain, *Mass Destruction: The Men and Giant Mines Who Wired America and Scarred the Planet* (New Brunswick, N.J.: Rutgers University Press, 2009).

¹⁴⁴ My approach here de-emphasizes the significance of social construction. In contrast, Kent Curtis argues that historians' "habit of beginning gold rush narratives at the moment of discovery ends up reinforcing the idea that, in a significant way, nature is responsible for these crucial episodes in western history." 277. Kent Curtis, "Producing a Gold Rush: National Ambitions and the Northern Rockies, 1853-1863," *Western Historical Quarterly* 40 (Autumn, 2009), 277. Though Curtis may be right about *successful* rushes, his analysis does little to help us understand their failed counterparts. Nature itself was never "responsible" for mineral rushes; at the same time, though, nature was *necessary* to rushes, and insufficient resource endowments resulted in conditions that participants in a capitalistic culture could not overcome, no matter how hard they tried.

People set about transforming the Kawuneeche in wide-reaching ways, but nothing they did or failed to do could change the legacies of geological processes that had unfolded long before the first human beings set eyes upon the Rockies. This was just one of the ways in which the Americans who tried to carve out homes in the valley remained subject to natural factors they could not control. Winters of deadly ferocity, growing seasons of wild unpredictability, and entire weeks in which no one could travel into or out of the valley—all of these served to demonstrate that in the Kawuneeche, at least, the triumph over the wilderness that nineteenth-century Americans celebrated as intrinsic to their manifest destiny remained partial and uncertain at best.

Ghost Landscapes of the Kawuneeche

Even in the 1860s, nearly two decades before the launch of the Kawuneeche silver rush, travelers to Colorado had already begun to express a sort of forlorn fascination with abandoned mining camps.¹⁴⁵ This growing fascination with western ghost towns that began in the nineteenth century and reached its apogee in the mid-twentieth century drew upon the deep fascination of Americans with ruins.¹⁴⁶ Yet enthusiasm for ghost towns also reflected a more basic preoccupation with the workings of chance and fate.¹⁴⁷ The ghosts that came to wander Lulu City, Gaskill, and the adjacent forests were, first and foremost, ghosts of failure. Old mining camps seemed interesting precisely because they seemed unusual, though such ghost

¹⁴⁵ See, for instance, William H. Brewer, *Rocky Mountain Letters, 1869: Letters Written to My Wife during a Trip to the Rocky Mountains, July to September, 1869* (Denver: Colorado Mountain Club, 1930).

¹⁴⁶ On twentieth-century ghost-town fascinations, see Jon T. Coleman, “The Prim Reaper: Muriel Sibell Wolle and the Making of Western Ghost Towns,” *Mining History Journal* (2001), 10-17.

¹⁴⁷ See Ann Fabian, *Card Sharps, Dream Books, and Bucket Shops: Gambling in Nineteenth-Century America* (Ithaca, N.Y.: Cornell University Press, 1990) and T. J. Jackson Lears, *Something for Nothing: Luck in America* (New York: Viking, 1993).

landscapes were actually quite common all across the American landscape.¹⁴⁸



Slipler Cabins, Lulu City Trail, 1938. By the twentieth century, the abandoned cabins and mines of the North Fork Valley were beginning to draw interest from tourists as quaint relics of a bygone past. H. Raymond Gregg Photograph, Oct. 6, 1938, catalog #10-F-9, negative #692, RMNP Photo Collection.

Viewed in this light, the mining camps of the Kawuneeche revealed that there was nothing predestined or foreordained about the American conquest of the valley. The newcomers succeeded in removing the Nuche from the Rockies, transforming the Kawuneeche's ecosystems and landscapes in the course of attempting to make the valley a productive place. Hundreds of men and a handful of women, using the most advanced technologies available to them, labored for many years in order to close the yawning gap between the realities that surrounded them on

¹⁴⁸ A keyword search on “ghost town” in *America History and Life*, for instance, returns well over 250 hits; most of these concern the American West, but articles appear on every other American region. Intriguingly, the Library of Congress has two relevant subject headings: “ghost towns” and “extinct cities.” The former returns hits concerned almost entirely with the American West, while the latter returns sources that range across all of world history.

the ground, and the golden dreams they had conjured up in their heads. When miners and townsfolk eventually took stock of the likelihood that they could make the Kawuneeche match their mental visions, they abandoned the struggle and forsook the valley to seek out greener, warmer, and richer pastures. They left behind a landscape that showed more evidence than ever before that the Kawuneeche, far from the pristine wilderness some boosters had depicted, was a place where nature and culture were growing ever more difficult to disentangle.

Chapter 3:

Settling and Conserving the Kawuneeche, 1880s-1930s

After 1886, Grand County shipped not a single ounce of bullion to the United States mint. Despite sporadic efforts to mine gold and silver that continued well into the 1930s, the North Fork mining districts never yielded any bonanza.¹ And so instead of continuing along the raucous and environmentally disastrous course charted by Leadville, Aspen, the San Juans, and other Colorado mining regions, the Kawuneeche Valley veered toward a different path. Agriculture, water development, and tourism would henceforth drive the area's development.²

For all of the ways in which mining literally laid the groundwork for this transition—particularly by hastening road construction to the Kawuneeche and exposing outsiders to the valley's plenitude of pasture, timber, scenery, and water—the switch from gold- and silver-seeking to mixed farming and ranching, water diversion, and outdoor recreation marked an important divergence. To be sure, a few folks stuck around after the boom crashed. Grand Lake's founder, the prospector Joseph Wescott, for instance, was the first man to patent a homestead in the Kawuneeche, in 1887, and remained in the area long thereafter.³ John Henry

¹ On lack of ore shipments, see Robert C. Black, III, *Island in the Rockies: The History of Grand County, Colorado, to 1930* (Boulder: Published for the Grand County Historical Society by Pruett Publishers, 1969), 228. On early twentieth-century efforts to resume mining operations in the Kawuneeche, see J. E. Shipler letter November 8, 1900, Vertical Files, "Mining Folder," RMNP Archives; *Middle Park Times*, July 12, 1912, quoted in Susan Baldwin, *Historic Resource Study: Dutchtown and Lulu City, Rocky Mountain National Park, Colorado* (Boulder, Colo.: Creative Land Use, 1980), 46; RMR, Dec. 1938, temp box 68:026 – "A2827 Reports, Monthly (1937-1938) Western District"; RMR, Dec., 1939, *ibid.*

² Andrew Isenberg has argued that this switch away from mining unfolded earlier in the California Gold Rush country, and was quite common throughout the American West. In the process, he turns Frederick Jackson Turner's "frontier thesis" on its head. *Mining California: An Ecological History* (New York: Hill & Wang, 2005).

³ Lorraine Turk, "Who Was ... Judge Joseph Wescott," Grand Lake County Historical Society, <http://www.kauffmanhouse.org/People/Wescott.html>; Joseph Wescott Homestead Entry, Sept. 9, 1887, granted on Sept. 9, 1887.

Hedrick, for his part, received a patent in 1889 for the homestead on which he had begun raising truck back in 1882, when the Kawuneeche, his son later recalled, was but a “wild rugged country containing only a few settlers, mostly prospectors.”⁴ These few exceptions aside, the vast majority of settlers filed homestead claims to the valley’s bottomlands after the mining boom crashed. A few homesteaders arrived in the 1880s and ‘90s; the majority, though, entered the Kawuneeche in the first quarter of the twentieth century. During a period of breakneck industrialization and intense urbanization, several dozen families embarked for a remote frontier in the Colorado high country. And though many evidently sought simply to get away from it all, these settlers were nonetheless participating in one of the largest American migrations of the era: a push by millions of families of many races, nationalities, and ethnicities into deserts, high plains, mountains, cutover forests, and other areas hitherto considered too marginal for farming.

⁴ Charles Hedrick, “Memoirs of Charles Hedrick, 1874-1950,” unpublished mss., RMNP Archives, p. 1.



View of Lulu City from the Grand Ditch, 1956. This photo shows the Lulu City trail snaking across the clearing that the mining camp almost certainly built upon and intensified. Taken from the Grand Ditch, it also suggests the important shift that occurred in the Kawuneeche by the 1890s: mining had collapsed only for a new form of extraction—water diversion—to rise up. D. Ferrel Atkins, 1956, catalog #12-5-A-16, RMNP Photo Collection.

Most of those who settled the Kawuneeche endeavored to establish self-sufficient homesteads. Some failed outright; most of the rest eventually made a daunting discovery: their own lands could never support them. To survive, they had to figure out how to draw upon resources from a wider array of ecosystems and markets. Killing wild game, grazing cattle, and cutting timber on public lands; selling dairy goods and garden produce in Grand Lake; earning wages on ranches and work crews outside the valley; renting beds and horses to tourists—these were just a few of the more common strategies the Kawuneeche’s homesteaders devised in their efforts to make new homes in the high mountains.

As settlers were laboring to transform the floor of the Kawuneeche into productive garden plots and hayfields, cattle barns and cabins, other changes were unfolding on the mountain slopes above. To Colorado's incoming Anglos, the mountains towering above the plains prompted both romantic flights of fancy and more pragmatic designs. Throughout most parts of the piedmont and some portions of the plains, snow remained plainly visible all year long. From October into May in most years, a deep, downy coat of white blanketed every range in sight. Even in the scorching, lip-blistering days of late summer, fingers of white streaked the Front Range high country. For folks who had grown up in Kansas, Nebraska, Wisconsin, Arkansas, New York City, Ireland, Westphalia, or almost anywhere else, seeing snow year-round was much more than a novel spectacle. These frozen stores of water taunted Americans on the plains with an alluring thought: If flatlanders could steer the mountain snows onto their fields instead of letting them slip past Colorado on their inexorably downslope course, they might deliver themselves from the vicissitudes of aridity in a region where annual precipitation generally lagged behind the minimum required to grow corn, sugar beets, vegetables, and even wheat.⁵

The Water Storage and Supply Company (WSSC), which traced its origins to a ditch company formed in Larimer County in 1881, began in the 1890s to carve a large diversion canal across the flanks of the Never Summer Range. Eventually named the Grand Ditch (a name that continues to stick to the canal), the project constituted the earliest successful attempt to divert water from the Colorado River watershed across the Continental Divide, to farms and homes along the semi-arid piedmont beneath the Rockies eastern slope. The company behind the Grand

⁵ Agricultural historian Oliver Knight claims that in Colorado's northern piedmont, "Diversified crops require about 2.5 acre-feet of water per acre annually." Oliver Knight, "Correcting Nature's Error: The Colorado-Big Thompson Project," *Agricultural History* 30 (1956), 158. This was about twice the amount of precipitation that fell on the area during an average year.

Ditch, the Water Supply and Storage Company (WSSC), joined most advocates of reclamation in seeing western waterscapes as inefficient and in need of modification through human interventions. Allowing the abundant water that fell on the Rockies to flow down Colorado's western slope to Utah, Arizona, Nevada, California, and Mexico struck boosters in the heavily agricultural counties of north-central Colorado as an unnecessary concession to an inherently wasteful natural order. WSSC leaders believed wholeheartedly in the doctrine of improvement; like the miners and homesteaders of the Kawuneeche Valley, the men behind the WSSC thought they could make the natural world better by reconfiguring land, water, and organisms into more productive and profitable arrangements. Once completed, the ditch that snaked ever so gradually upward from the summit of Poudre Pass to intercept the downward course of twelve creeks carrying rain and snowmelt down from the Never Summers would essentially capture a large area of the North Fork's watershed and added it to the Poudre basin. The construction of the Grand Ditch eventually reduced the water table on the Kawuneeche's floor and limited the frequency and magnitude of the floods that had long played an important role in shaping the valley landscape; it also initiated long-running conflicts between the water company and Kawuneeche landowners over the aesthetic and ecological damage the transmontane diversion project inflicted on the slopes above the Colorado River. After Congress established Rocky Mountain National Park in 1915, ditch company leaders, rightly anticipating that the incorporation of the Never Summers into the Park would only cause the WSSC trouble, successfully fought proposals to extend the park boundary. Only in 1930 did the ditch company drop its opposition to Park expansion—and only then because Congress took pains in the legislation enabling the Never Summer annexation to safeguard the interests of the WSSC and the eastern-slope farmers it served.

While the Grand Ditch revealed the continuing power of private irrigation interests over Colorado's landscapes, the National Park Service's long-running struggle to contain the ditch's environmental impact demonstrated the growing power of the federal government in and around the Kawuneeche. Though the federal government became the nominal owner of the entire valley after the Treaty of 1868 transferred title of the region from the Nuche to the United States, the federal government maintained only a weak, sporadic, and unobtrusive presence in the Kawuneeche prior to 1902. In that year, President Theodore Roosevelt signed an executive order transferring most of the forested slopes of the North Fork Valley into the Medicine Bow Forest Reserve. From that point onward, the federal government moved to place most of the Kawuneeche area in government hands.

A newfound desire to protect the West's limited water supplies constituted the initial justification for federal conservation of the forested flanks of the Kawuneeche. Soon, though, the U. S. Forest Service (formed in 1905 by Roosevelt and placed under the command of Gifford Pinchot) broadened its campaign, seeking not only to restrict unauthorized grazing and logging on the public domain, but also to suppress forest fires, build trails, prevent poaching, reintroduce desirable game species, eliminate predators, and otherwise turn the forests and tundra of the Kawuneeche into an orderly, managed landscape. Only by accommodating a mixture of human uses, after all, could the national forests fulfill Pinchot's injunction to advance "the greatest good for the greatest number of people for the longest time."⁶ H. N. Wheeler, the first chief of the Medicine Bow National Forest, initially supported proposals to designate portions of the reserve

⁶ Curiously, Pinchot's initial articulation of this famous phrase occurred in a letter he wrote for James Wilson, Secretary of Agriculture—and addressed to himself. James Wilson to Gifford Pinchot, Feb. 1, 1905, quoted in U.S. Forest Service, "Pinchot and Utilitarianism," *The Greatest Good*, <http://www.fs.fed.us/greatestgood/press/mediakit/facts/pinchot.shtml> (accessed May 25, 2011). More generally, see Samuel P. Hays, *The American People and the National Forests: The First Century of the U.S. Forest Service* (Pittsburgh: University of Pittsburgh Press, 2009), ch. 2.

a national park (Estes National Park was the first name attached to the project, but supporters soon realized that Rocky Mountain National Park had a less provincial, more grandiose ring to it).⁷ During the same years that the campaign to create the Park was building momentum, a bitter rivalry was developing between the USFS and the NPS. The Forest Service's suspicion of the Park Service constituted a natural outgrowth of the two agencies' differing priorities and shared ambitions.⁸ While foresters endeavored to maintain and extend their control over the forest reserves that Roosevelt and his predecessors had set aside, officials of the newly created Rocky Mountain National Park (established in 1915) were anxious that commercial development would creep up the Kawuneeche from Grand Lake to ruin the western approach to the Park. They thus set their sights on extending the Rocky's boundaries. In the decades ahead, the Park Service would seek to annex as much of the Kawuneeche as possible, despite meager budgets, wavering political leverage, and uncertain popular support in a region where citizens generally opposed any government action that threatened to restrict individual freedom or constrain capitalist development.⁹

Informal, uneasy, and unstable compromises between homesteading, water diversion, and federal conservation adopted material form on the Kawuneeche Valley landscape between the

⁷ According to Buchholtz, Wheeler initially advocated the creation of a "game refuge" at a talk to the Estes Park Protective and Improvement Association in 1907; over the summer of 1908, Enos Mills and other activists transformed Wheeler's notion of a game refuge into a national park. As Mills grew increasingly critical of forest reserves, Wheeler turned against the proposal. The name of the proposed park changed from Estes Park National Park and Game Preserve in 1910 to Rocky Mountain National Park in 1913. C.W. Buchholtz, *Rocky Mountain National Park: A History* (Niwot, Colo.: University Press of Colorado, 1983), 128-135.

⁸ Hal K. Rothman, "'A Regular Ding-Dong Fight': Agency Culture and Evolution in the NPS-USFS Dispute, 1916-1937," *Western Historical Quarterly* 20 (summer, 1989), 141-161.

⁹ On anti-conservation politics in Colorado, see G. Michael McCarthy, *Hour of Trial: The Conservation Conflict in Colorado and the West, 1891-1907* (Norman: University of Oklahoma Press, 1977).

1880s and the Rocky Mountain National Park expansion of 1930.¹⁰ Settlers maintained private ownership over homesteads in the valley bottom, increasingly supplementing their all-too-meager earnings from ranching, farming, and other forms of cultivation and extraction by catering to the growing numbers of tourists attracted to the national forest and especially to RMNP. The Water Supply and Storage Company continued to reroute water from the Never Summers to the farms of the northern Colorado piedmont. The USFS managed the southwestern portion of the valley according to multiple-use principles, while the NPS managed most lands east of the Colorado River under Congressional mandates that emphasized both protecting the National Park's natural features, and making these accessible to tourists. By the late 1920s, though, the Park Service had tired of trying to accommodate the competing visions and practices that underlay these various schemes to transform the Kawuneeche Valley environment. Rocky Mountain thus sought to expand its borders. Once the agency had successfully annexed most of the eastern slope of the Never Summer Range, though, it began to struggle with the legacies of a fragmented landscape and the disjointed ambitions that had battled for the valley over the preceding half century.

Imagining and Building the Grand Ditch

With high hopes and considerable popular support, entrepreneurs from Larimer and Weld Counties began in the 1880s to direct their attention to the Kawuneeche Valley. An 1884 item in the Fort Collins *Courier*, for instance, reported that in August of 1883,

reconnaissance [sic] was made in the mountains, at the head of the Cache la

¹⁰ Here I include both utilitarian and preservationist wings within the broad term “federal conservation.”

Poudre, and in the vicinity of Grand Lake, primarily to search for suitable reservoir sites, and secondarily, to determine as to the feasibility of turning the waters of Grand Lake eastward into the St. Vrain and Boulder Creeks. It was originally planned to examine the head waters of other streams, but the unusual amount of fallen timber across roads and trails [perhaps a consequence of recent wildfires] made progress slow and the deficiency of appropriation prevented further investigation.

This star-crossed expedition had endeavored to examine Grand Lake and “ascertain whether it were practicable to turn its waters eastwardly.”¹¹

The technical and financial challenges involved in lifting water from the lake some two thousand feet up and over the Continental Divide, though, led irrigation supporters to devise a new scheme: By building a ditch high along the mountains, they could intercept water from some of the Colorado River tributaries that fed Grand Lake. The real advantage of such a ditch was that it could maintain a high line to deliver western slope water into the Poudre watershed using the force of gravity instead of costly pumping.

The basic idea for the Grand Ditch was taking shape, but little concrete work on the project was completed for several years. At last, in 1889, the Larimer Water Supply Company was incorporated, most likely as an offshoot of the Larimer County Ditch Company, formed in 1881 in hopes of bringing water from the Poudre River and its mountain tributaries to farmers on the plains below.¹² “The objects for which the company [wa]s created,” the Fort Collins *Courier*

¹¹ “Storage of Water,” *Fort Collins Courier*, Jan. 22, 1885, p. 4.

¹² James E. Hansen, *The Water Supply and Storage Company: A Century of Colorado Reclamation, 1891-1991* (Fort Collins: Water Supply and Storage Company, 1991), 9-12; *Fort Collins Courier*, July 25, 1885, p. 1. The LCDC founders were Noah Bristol (a dairy and sheep farmer), N. C.

explained of the Larimer Water Supply Company, was “to acquire, construct, enlarge, and maintain ditches for the purpose of taking, diverting, and appropriating a portion of the unappropriated [sic] waters of the Grand and Michigan rivers [now known as Michigan Creek, the latter stream flows down the western side of the Never Summer Range] and conveying the same into the tributaries of the Cache la Poudre river [sic] for the purpose of supplying the Larimer County ditch with water for irrigation and domestic purposes.” According to the *Courier*, the company’s plans were “known to be feasible and the only questions remaining undetermined are those relating to the cost and the quantity of water that can in this way be added to the present supply of the Larimer County ditch company.” The company’s projectors believed that they could enhance the flow of water in their main canal by 75 to 100 cubic feet of water per second “at a moderate expense,” which would “make a perceptible difference in the water supply of that ditch and add correspondingly to the value of farming land under it.”¹³

The new firm proceeded cautiously and slowly. It took the rupture of the ditch company’s six year-old dam at Chambers Lake, north of the Kawuneeche in the foothills of the Poudre River watershed, to push company officials into reorganizing their firm into a new concern, the Water Supply and Storage Company (WSSC).¹⁴ “Should the Grand river be tapped,” the Greeley *Tribune* explained, the Larimer Ditch Company would “have an abundance of water to keep their 50 miles of ditch [all of it in Larimer County] running a full head all summer.”¹⁵

The WSSC adopted plans to build three ditches: one along Specimen Mountain, and one

Alford (a bee-keeper and ex-pro prospector), and the Avery brothers (who brought experience in banking and real estate to the group).

¹³ “More Water,” *Fort Collins Courier*, July 25, 1889, p. 1.

¹⁴ On Chambers Lake and corporate succession, see C. E. Tait, “Storage of Water on Cache La Poudre and Big Thompson Rivers,” U.S. Department of Agriculture, Office of Experiment Stations, Bulletin No. 134 (Washington, D.C.: G.P.O., 1903), 33

¹⁵ *Greeley Tribune*, Aug. 5, 1891, p. 4.

each along the eastern and western sides of the Never Summer Range.¹⁶ Though a plethora of irrigation schemes had led many unscrupulous corporations to enter Colorado's water business during the 1880s and '90s, the WSSC resembled a cooperative enterprise.¹⁷ Nearly all of the company's 600 shares were held by the farmers and ranchers who depended on the WSSC for irrigation water.¹⁸ The WSSC's zeal thus reflected not so much the bold dreams of a few far-sighted officials, but rather the common ambition of hundreds of agriculturists along the northern piedmont to transform the snow and rain that fell in the Grand River watershed into luxuriant fields of grain and prolific herds of livestock.¹⁹

This ambition was abundantly evident in newspaper stories on the progress of the resulting project, named the Grand Ditch because it originated in the watershed of what was then known as the Grand River. "In the Grand valley," a 1901 piece claimed, "there is much more water than can ever be utilized in irrigation from a lack of irrigable land."²⁰ Another article from the *Courier* that same year described how "the diverting of the Grand river waters" into the Cache la Poudre would have no deleterious effect on the Grand, for its "large tributaries ... flow into it far below where the Cache la Poudre ditches are taken out." The *Courier* noted longingly of the Grand that "it has the largest volume of any stream in Colorado, larger perhaps than both

¹⁶ "More Water," *Fort Collins Courier*, July 25, 1889, p. 1.

¹⁷ As one congressional committee complained, many irrigation companies were "unreliable, not financially able to carry out the proposed work, and in many instances the proposed plan of irrigation is not feasible or practical." Hearings before House Subcommittee on Appropriations (Washington, D.C.: G.P.O., 1913), 671.

¹⁸ Tait reported that the company had issued 600 shares; "Storage of Water on Cache La Poudre and Big Thompson Rivers," 36. In 1965, the WSSC had "600 shares of stock outstanding" held by "approximately 230 individual share holders who own varying numbers of shares dependent upon their irrigated acreage. ... Sales of Company shares are few and far between," except for those involving land transfers. A few, Barkley reported, had recently been sold for \$12,000 a share. J. R. Barkley to John Holzwarth, December 1, 1965, copy, doc. W-24, in NPS Water Resources Division, "Documents Relating to the Grand River Ditch in Rocky Mountain National Park," vol. 1.

¹⁹ Alva Adams, *Apples and Alfalfa: The Gospel of Irrigation* (Denver: Colorado State Board of Immigration, 1909).

²⁰ *Fort Collins Weekly Courier*, July 25, 1901, p.6.

the Platte and the Arkansas combined.” Indeed, the Fort Collins paper declared the river’s “supply of water . . . practically inexhaustible, as the arable land along the stream is confined to a narrow valley.”²¹ The real value of the Grand River watershed, in short, was that “the conditions prevailing” on the eastern slope of the Rockies were “reversed—there is more water than land.”²² Diverting water could even out the vagaries of an uneven landscape.

Contemporary commentators seemed anxious to believe that their dreams of water diversion would generate only positive, productive outcomes. Articles boosting the Grand Ditch depicted water as an alchemical substance: applying it to eastern slope agricultural lands yielded a sure and easy harvest of gold. An 1893 article confidently estimated that “The actual cash value of the water brought from beyond the watershed of the Poudre river and its tributaries and added to their natural flow will not be less than half a million of dollars.” Because farmers would proceed to spend or invest much of that \$500,000 locally, thus leading to a multiplier effect as the same money passed through many peoples’ hands, the ditch would “be the direct means of adding millions of dollars to the wealth of Larimer and Weld Counties.”²³ Another journalist assured readers not by specifying how much wealth the ditch might provide, but instead by suggesting that the diversion project fulfilled a higher injunction:

the construction of this system of feeders will cost considerable money but the value of the water they will bring to the Poudre valley cannot be estimated in dollars and cents. The Water Supply and Storage Company is a pioneer in the effort to make water from the western slope do duty on the farms of the eastern

²¹ *Fort Collins Weekly Courier*, August 29, 1901, p.7.

²² *Ibid.*

²³ *Fort Collins Courier*, August 10, 1893, p. 1.

slope, and it is entitled to great credit for the success that has attended the effort and the good already done by the additional supply of water secured.”²⁴

This choice of words was particularly revealing: The Grand River’s tributaries had flowed for eons, the author suggested, without doing people any good. The WSSC was about to put an end to such profligacy, at last making these waters to “do duty.” It was a muscular and double-edged verb phrase—one capable of uniting nationalistic and utilitarian metaphors of empire into a seamless whole. Long idle yet capable of performing valuable labor, the Grand’s waters would finally be put to work so that they could satisfy their responsibility to the nation.

Agricultural boosters across the West dreamed that reclaiming the region’s lands and waters would usher in a new millennium—one in which progressive Americans would harness the vicissitudes of a fickle and wasteful Nature to supplant, in historian William Cronon’s masterful interpretation, “natural scarcity” with “artificial abundance.”²⁵ And though the construction and operation of the Grand Ditch would indeed serve to sustain the fields and farms of WSSC stockholders, the diversion project would also cause a host of ecological, aesthetic, and financial problems that irrigation boosters failed to anticipate.

²⁴ *Fort Collins Courier*, September 24, 1896, p. 5. This was not the only use of the phrase; nearly a decade later, another article on the WSSC reported of several tributaries of the Grand that these streams would soon “be turned across the range and made to do duty irrigating the crops of the Poudre Valley.” *Fort Collins Weekly Courier*, September 23, 1903, p. 11.

²⁵ William Cronon, “Landscapes of Abundance and Scarcity,” in *Oxford History of the American West*, ed. Clyde A. Milner II, Carol A. O’Conor, and Martha A. Sandweiss (New York: Oxford University Press, 1994), 613. On the larger context of irrigation in this era of western history, see especially Marc P. Reisner, *Cadillac Desert: The American West and Its Disappearing Water* (New York: Viking, 1986); Norris Hundley, Jr., *The Great Thirst: Californians and Their Water, 1770s-1990s* (Berkeley and Los Angeles: University of California Press, 1992); Donald J. Pisani, *From the Family Farm to Agribusiness: The Irrigation Crusade in California and the West, 1850-1931* (Berkeley: University of California Press, 1984); Donald Worster, *Rivers of Empire: Water, Aridity, and the Growth of the American West* (New York: Pantheon, 1986); and Mark Fiege, *Irrigated Eden: The Making of An Agricultural Landscape in the American West* (Seattle: University of Washington Press, 1993).

Building the Grand Ditch proved much more difficult and expensive than company officials initially believed. The ditch's main diversion canal stretching from Poudre Pass to Baker Gulch required four fitful decades of construction to complete. Construction started in late summer, 1891 on a line surveyed by the Larimer Water Supply Company the previous warm season.²⁶ Crews struggled to finish one mile of ditch that summer. It took three more years before the WSSC even begin to turn water into this initial stretch of the Grand Ditch. Despite the delay, the Ft. Collins *Courier* remained as bullish as ever on the project, boasting to its readers that the WSSC had accomplished something nature never had: "The waters of the Poudre river are now mingled with the waters of the Grand and the Laramie rivers."²⁷ Crews widened this first mile of ditch in September, 1895. Next, in the fall of 1896, they began to extend the right of way, only to be halted as the WSSC's dicey financing fell apart. After two more years of minimal activity, writes Russell Bradt, "A large crew of men under John McNabb, foreman, and William Rist, engineer, was put on the South Side ditch [later known as the Specimen Ditch] the latter part of July."²⁸ The company completed this second canal in 1900, creating a canal 1.22 miles long, "six feet wide at the top, three feet wide on the bottom, three feet deep, ... and [with] a carrying capacity of one hundred seventy-two cubic feet of water per second."²⁹ Work crews then moved back to the ditch running southwesterly from Poudre Pass across the Never Summer Range, where they continued to work until winter.³⁰

²⁶ The WSSC refused to allow researchers on this project into the company's archives. Apparently, though, their first record book commenced on July 23, 1891; Betty Jane Kissler, "A History of the Water Supply and Storage Company" (master's thesis, Colorado State College of Education, 1952), 40.

²⁷ *Fort Collins Courier*, Aug. 23, 1894, p. 1.

²⁸ Russell N. Bradt, "Foreign Water in the Cache La Poudre Valley" (master's thesis, Colorado State College of Education, 1948), 3.

²⁹ *Ibid.*, 3.

³⁰ *Ibid.*, 3.

Few primary sources document the labor involved in digging these canals³¹ Historian James Hansen, though, provides a useful composite illustration: “Early ditch digging was a grueling form of manual labor, particularly in the mountains. Lacking modern machinery, and assisted only by teams of draft animals, work crews dug with picks and shovels, felled trees with axes, and sawed and hammered into crude flumes when diverted water resisted earthen channeling.” The vagaries of high country environments confounded workers at every turn. Hansen, quoting a contemporary account, notes that “In late July of 1901, low temperatures mandated day shifts only, while ‘mosquitos big as hummingbirds’ tortured men and animals alike. Work progressed slowly, especially when boulders and woods blocked a surveyed path, despite constant pressure to hurry.”³² Those who labored on the Grand Ditch rarely possessed the luxury, in short, of imagining themselves as nature’s masters.

Ditch crews spent their nights in camp and most of their days on the worksite. Workers established season-long camps of tents or, more rarely, log cabins, situated on relatively flat ground that was either already free of timber, or easily cleared. By the 1930s, WSSC employees had built seven ditch camps in all, each of them perched more than 10,000 feet above sea level. Each morning, inhabitants of these camps would have dragged their weary bodies out of bed, drank coffee, and ate breakfast. Most workers then set out along the gravel road built atop the canal’s down-slope (or eastern) flank, but a few would have been charged with rounding up draught animals that had been set out the previous night to graze.

³¹ Few historians have taken the labor of ditch and canal diggers seriously; for a few exceptions, see Peter Way, *Common Labour: Workers and the Digging of North American Canals, 1780-1860* (New York: Cambridge University Press, 1993); Robert B. Campbell, "Newlands, Old Lands: Native American Labor, Agrarian Ideology, and the Progressive-Era State in the Making of the Newlands Reclamation Project, 1902-1926," *Pacific Historical Review* 71 (2002), 203-239.

³² Hansen, *The Water Supply and Storage Company*, 14, quoting *Fort Collins Courier*, July 25, 1901, p. 3.



This undated photograph documents several important features of the Grand Ditch. Note the large right-of-way, the steep slopes of ground denuded of timber, the rough character of the banks of the ditch itself, and the log cabins used by the workers who inhabited this ditch camp. Photographer unknown, n.d., catalog #10-D-606, RMNP Photo Collection.

Together, men and livestock built the ditch through a sequence of stages. Engineering and survey crews located the canal's future course, which they marked with flags, stakes, and signs to claim the waters of each creek the ditch intercepted as the property of the Water Supply and Storage Company.³³ Gangs of laborers followed, typically composed of transient, unskilled workers, many of them undoubtedly immigrants (various sources mention Chinese and Japanese as having labored on the Grand Ditch).³⁴ Foremen called many of the shots. Most laborers

³³ On signs, see the recollections of Edward Baker, a later president of the WSSC who first came to the Grand Ditch in 1900 and spent the summer with an engineering crew that surveyed a route extending beyond the future head of the ditch at Baker Creek. Edward Baker interview by Ferril Atkins, June, 1966, transcript, tape #1 of 2, Ferril Atkins Papers, RMNP Archives.

³⁴ Baker mentions Japanese workmen employed by a contractor, probably prior to World War I. Ibid. An early travel account also mentioned finding "remains of Jap houses built to house the Japanese

hefted saws, shovels, picks, and other common tools. Most of the digging and piling, though, was accomplished via horse-driven plows and scrapers.³⁵

For long stretches, ditch workers faced the relatively easy task of digging a trench and piling up an earthen wall capable of preventing water from spilling out of the canal and down the mountainside. At many points, however, making the ditch required blasting and other forms of expensive, highly-skilled rock work. No matter what stood in the canal's path had to give way, after all, for the ditch would only work if it maintained a slight and steady gradient.³⁶

Given the ditch's elevation and its course across steep mountain flanks covered with subalpine fir and Engelmann spruce interspersed with talus, swiftly tumbling streams, and the occasional face of sheer rock, workers encountered no shortage of environmental challenges in the course of their daily labors. Besides the aforementioned cold weather and hungry mosquitos, streams swollen with melting snow would have made work difficult and uncomfortable well into June.³⁷ Skin exposed to the sun at an elevation almost two miles above sea level tanned and burned much more rapidly than on the plains below; windburn may have been only slightly less common than sunburn. By July, temperatures could soar into the 80s. But vicious thunderclouds rolled in almost every day, usually arriving within a few hours of noon to beat down in sharp,

employed for ditch diggers." John Wiley, "Five Days on Horseback in Rocky Mountain National Park", *Hotel Monthly*, 45. Chinese are mentioned in "Grand River Ditch-July 1955," n.d., doc. W-43 in NPS Water Resources Division, "Documents Relating to the Grand River Ditch in Rocky Mountain National Park," vol. 1.

³⁵ Baker recalled of the work he witnessed around 1900 that "They had a gang of men—w as all plow and shovel work—uh, and scraper—all teams—and, uh, [McNAB] was a foreman and he had about, uh, oh—twenty men working for him. It was all plow and shovel work." Baker interview with Atkins, brackets in original.

³⁶ See "A Water Company's Stupendous Work," *Fort Collins Weekly Courier*, Dec. 30, 1903, p. 7, quoted *in extenso* on the next page.

³⁷ Consider, for instance, a report from a ditch employee in early June, 1905, in which he claimed that there was still "lots of snow on the hill sides" of the Kawuneeche. *Fort Collins Weekly Courier*, June 7, 1905, p. 7. Late the next spring, another crew "report[ed] encountering a smaller body of snow than they expected to find, but say it is packed down hard and will be a long time melting." *Fort Collins Weekly Courier*, May 2, 1906, p. 15.

drenching bursts accompanied by peals of thunder and so much static activity that workers' hair surely stood on end for more reasons than one. On occasion, hail pelted ditch crews like gravel hurled down by mountain gods perched atop the peaks above. Especially as summer shaded into fall, snowfall along the ditch route began to hint at winter's onset.³⁸ Though the WSSC and its contractors occasionally rolled the climatic dice, they generally knew better than to plan any work on the Grand Ditch after early October.

As WSSC surveyors charted out a course for further extensions, "a crew of twenty men and eight teams" resumed the difficult work of ditch-building in July, 1901. They optimistically declared their intention of finishing, in Bradt's words, "a five mile ditch over known territory in one season."³⁹ Alas, the work took longer than expected. By the time winter descended, crews had completed less than one additional mile of canal. The WSSC, frustrated by another season of unexpectedly slow construction, began to offer contractors stronger incentives if they finished their work on schedule. W. C. Bradbury signed such a contract in May, 1902, agreeing to complete the ditch to Dutch Town Creek by the end of the year.⁴⁰ Bradbury soon dispatched a crew of more than 200 men, but even this full-scale effort failed to achieve the desired result because of the host of obstacles, including "timber two feet in diameter and 75 feet tall," standing in their way.⁴¹ The long-promised triumph of human engineering over the mountain environment thus awaited ongoing delays.

Construction troubles did little to shake the faith of ditch boosters. Indeed, the delays enabled them to cast the project in heroic terms. A long item appearing in the Fort Collins

³⁸ Some six inches of snow covered the range in early September, 1902. *Fort Collins Weekly Courier*, Sept. 3, 1902, p. 8

³⁹ Bradt, "Foreign Water in the Cache La Poudre Valley," 5.

⁴⁰ *Ibid.*, 5-6; Hansen, *Water Supply and Storage Company*, 15.

⁴¹ *Fort Collins Weekly Courier*, Oct. 1, 1902, p. 5.

Courier in December, 1903, for instance, celebrated the Grand Ditch as a triumph of human ingenuity and industriousness:

The ditch, as far as finished, has been constructed upon a most scientific and thorough plan, notwithstanding the fact that for most of its length it lies on the slope of a mountain side whose incline is at least of an angle of 45 degrees. It is built upon what is known as regular railroad curves, and upon a most substantial foundation. No log cribbing enters into the composition of its lower bank, but the whole ditch has been carved out of the hill side as a complete and continuous excavation. In fact the lower bank of the ditch is of such a solid structure that heavily loaded freight teams may be driven along it without doing it the slightest damage. Thus the danger of the ditch's breaking or the sliding out of its lower bank had been obviated.⁴²

The newspaper lauded the WSSC for imposing the order of “regular railroad curves” on the steep slopes of the Never Summers, as well as for harmonizing the ditch and its setting via “a complete and continuous excavation” that seemed (inaccurately, as it turned out) to promise strength and stability. The *Courier* went on to develop a second argument for the ditch as a clever improvement on the natural order: “The ditch will be of greater value from the fact that it will afford both early and late water, from the additional fact that a part of the water shed drained

⁴² *Fort Collins Weekly Courier*, Dec. 30, 1903, p. 7. See also an earlier story, which claimed that “So far as the ditch has been completed it is the best ever constructed in the mountains, every care having been taken and every provision made for safety and permanency. The embankments, built of rock and earth work, are wide enough for a wagon road and are used as such now by camp freighters. They are broad, firm and durable, with no sharp curve to impede the flow of water and no weak places anywhere along the line. The entire work is, indeed, of the most substantial and durable character.” *Fort Collins Weekly Courier*, Sept. 23, 1903, p. 11.

slopes to the southeast, and a part to the northeast. The first will receive the earliest effects of the spring sun and afford the early water, while the latter will be colder and will retain the ice and snow of winter until quite late in the season when the water is highly prized by the farmer.”⁴³ To this writer, at least, the Grand Ditch seemed to promise a perfect union of nature and artifice.⁴⁴



A newly-built segment of the Grand Ditch shows the elaborate construction methods required on some stretches. Note the rock-covered slope, much of which was probably cleared of trees such as those just visible in the background, the large quantities of timber in the structure itself, and the covering the timber provided, which kept the ditch clear of obstructions and reduced evaporation. Photographer unknown, n.d., catalog #10-D-605, RMNP Photo Collection.

Skillfully designed and constructed with close attention to the particularities of terrain, climate, and hydrology, the diversion project embodied a time-honored American belief that the application of human intelligence and labor to the landscape could perfect what the Creator had

⁴³ *Fort Collins Weekly Courier*, Dec. 30, 1903, p. 7.

⁴⁴ For more on this ideology, see Fiege, *Irrigated Eden*.

wrought.⁴⁵ The discourse of improvement, as we saw in the last chapter, combined moral imperatives with financial rewards. WSSC president A. A. Anderson framed the ditch's economic benefits in an article entitled "Does Irrigation Pay?," which appeared in the *Courier* in January, 1903:

Eight years ago the stock in this company was selling at \$500 per share, and at this time it is selling at \$2,250 per share, an advance of \$1,750. This advance in the value has come mainly from and on account of the construction of the mountain ditches and reservoirs and the perfection and enlargement of the plains system of reservoirs with its exchange of water with the river and with other ditches in this district. Previous to the time when this additional supply of water was acquired, almost every farm under our canal was poorly supplied with buildings and mortgaged for all it would stand. Now, the same places are supplied with fine homes, and large, commodious barns and sheds for the farmers' stock, and a mortgage is almost unheard of and a thing of the past. The water supply is abundant, both for early and late crops, and it is a common occurrence for our farmers, especially those who cultivate potatoes and beets, to clean up, net, from a quarter section of land \$4,000 to \$6,000 in one year.

⁴⁵ Irrigation boosterism apparently had its limits, at least in northern Colorado. An item in the *Courier* reported that Fort Collins mayor F. R. Baker had "attended the sessions of the Irrigation Congress held last week in Colorado Springs." Baker lamented the absence at the conference of any speakers from the WSSC, for "Many of the addresses, says Mr. Baker, would lead a person not familiar with our irrigation region to believe that all the vast expanse of dry prairie land could be brought under cultivation and made to blossom as the rose because of the national irrigation law. Of course, as many of us know, this cannot be done. Only a small portion of the arid plains can be watered from reservoirs." *Fort Collins Weekly Courier*, Oct. 22, 1902, p. 2.

After enumerating other benefits: “a large acreage of alfalfa crop grown under the canal of the company, yielding thousands of tons of hay,” “potato farms ... as fine as can be found anywhere, the yield each year averaging about 150 sacks per acre,” “a large acreage of sugar beets ... delivered at the new sugar factory in Eaton which was erected in the spring of 1902”—Anderson claimed that “Farm land under our canal, which sold eight years ago at from \$20 to \$30 per acre, is now readily bringing from \$60 to \$100 per acre.”⁴⁶

The Grand Ditch seemed to be paying handsomely, with farmers in Larimer and Weld Counties the project’s prime beneficiaries.⁴⁷ The WSSC president readily put prices on the improvements his company had made possible. Yet like other irrigation advocates, he also glimpsed beneath the cold figures on economic gain a subtler calculus of social and moral betterment. “Good schools are established at convenient distance for the education of the children of the farmers living along the line of the canal,” the company president noted. “All our people are prosperous and happy, and the future never appeared brighter than at present.”⁴⁸

Anderson, though, turned out to be a poor prophet. Legal battles and financial trouble struck the company hard in the months following the publication of his ode to the ditch’s immense worth. As a result, the WSSC decided to levy assessments on shareholders of \$100 a share in 1903 and \$150 a share in 1904—no small sum for most farmers during a period when

⁴⁶ A. A. Anderson, “Does Irrigation Pay,” *Fort Collins Weekly Courier*, Jan. 14, 1903, p. 3.

⁴⁷ Engineer E. S. Nettleton elaborated on the value of irrigation in a 1901 government report on the Cache La Poudre. “Before the day of reservoirs,” Nettleton reminded his readers, “crops often failed for lack of water; the increased supply has made possible a good crop every year. But the most noticeable effect of storage”—and, by extension, the system of feeder canals such as the Grand Ditch that had begun several years previously to supply reservoirs on the eastern slope of the Rockies with Colorado River water—“is the farming of higher-priced crops than could be raised before.” E. S. Nettleton, “The Reservoir System of the Cache La Poudre Valley,” U.S. Department of Agricultural Experiment Stations, Bulletin No. 92 (Washington, D.C.: G.P.O., 1901), 107.

⁴⁸ Anderson, “Does Irrigation Pay?”

working men who made more than \$750 a year usually considered themselves fortunate.⁴⁹

Western farmers and agricultural boosters remained an optimistic lot; hope sprung eternal in WSSC circles, the downturn notwithstanding. After the company's annual meeting in January, 1905, the *Courier* passed along some good news: "During the coming season," the water company would "complete its stupendous Grand River ditch enterprise by means of which a large volume of water will be added to the present supply for irrigation purposes, making it possible to open up new farms and adding to the population and wealth of the rural districts."⁵⁰

The ditch, however, remained stuck in place. In 1906, thanks to the assessments levied on the shareholders who used Grand Ditch water, contractors pushed the conduit to Tank Creek, between Dutch Town Creek and Roaring Creek. And though no one at the time knew it, the head of the canal would remain there for almost a decade thereafter, with the extended ditch successfully slaking the thirst of plains farmers for western slope water.⁵¹

From then through the early 1920s, "only maintenance and repair work was done on the ditch," and a portion of the route was covered.⁵² Virtually all of this work was performed during the irrigation seasons of late spring, summer, and early fall, though at least one caretaker generally remained on site throughout the winter. The forms filled out by a census taker in the summer of 1910 offer an unusual glimpse into the life of the men the WSSC employed to open the ditch for the season and keep its waters flowing. Foreman Joe Baker, born in Utah 46 years earlier, oversaw an eleven-man crew:

⁴⁹ Easing the burden for stockholders, at least psychologically, was an increase in share prices to \$2,500 to \$3,000. *Fort Collins Weekly Courier*, Aug. 26, 1903, p. 2.

⁵⁰ *Fort Collins Weekly Courier*, Jan. 4, 1905, p. 2.

⁵¹ Bradt, "Foreign Water in the Cache La Poudre Valley," 9.

⁵² *Ibid.*, 9.

Jennings Burke, 31, servant, single	Alabama	Laborer/Ditch
William Harfus, 48, servant, single	Indiana	Laborer/Ditch
George Ingram, 48, servant, single	West Virginia	Laborer/Ditch
John Dunn, 58, servant, single	Pennsylvania	Miner/Quartz Mine
Orrin Dolan, 21, servant, single	Iowa	Laborer/Ditch
Cornelius Legg, 39, servant, single	Tennessee	Laborer/General Farm
Park Stow, 33, servant, single	New Jersey	Maker/Paper
Eugean Mitchell, 31, servant, single	Wisconsin	Laborer/Ditch
Robert Wheeler, 40, servant, single	Michigan	Carpenter
William Manger, 58, servant, single	Ohio	Cook/Ditch Company
Charles McMahan, 45, servant, single	Kansas	Bookkeeper/Ditch Company ⁵³

Perhaps the most striking demographic commonalities of this workforce was their American origin and single marital status. John Dunn may have dabbled in prospecting, but it seems his main job entailed overseeing any blasting or other rock undertaken by the WSSC. Cornelius Legg, meanwhile, probably had charge of the company’s animal workforce, while the duties of Robert Wheeler (who was in the process of becoming a well-known innkeeper on his homestead below Lulu City) would have included fixing headgates and other wooden structures (Park Stow’s role as “Maker/Paper,” by contrast, remains obscure).

Across the world, the crews who built and maintained canals and ditches performed labor of the most rugged and physical kind. Even when placed in its larger global context, though,

⁵³ U. S. Census, 1910, manuscript rolls for Grand County.

work on the Grand Ditch must have entailed unusual challenges, ranging from altitude sickness to exposure to isolation. It should come as no surprise, then, that long-time WSSC official Edward Baker recalled of the laborers with whom he worked just after his college graduation on a summer maintenance crew as “strong, brutes of men—by God they had to be a brute to handle those plows and that heavy machinery and stuff.”⁵⁴

The exertions of construction and maintenance crews had carved a functional ditch out of the Never Summer Mountains, but the canal remained open to the elements. This liability exposed the ditch to a range of potential problems. In order to protect the irrigation lifeline on which many Poudre Valley farmers depended, water company officials decided to enclose the conduit in 1914; by 1917, crews had finished covering some nine thousand linear feet of the canal with cross-set timbers spaced to prevent larger boulders and trees from plugging the canal.⁵⁵

Just as the WSSC appeared to have protected the ditch against the elements, though, climatic and legal events impelled the company to launch a new phase of construction. A very dry year in 1919 kindled new plans for expansion by making company shareholders anxious to secure a larger and more stable supply of Grand River water.⁵⁶ These plans might have come to naught if not for the U. S. Supreme Court’s 1922 decision in *Wyoming v. Colorado*. The Court’s ruling limited the WSSC’s ability to divert water from the Laramie River into the Poudre River; this, in turn, led the company to redouble its efforts to secure western slope water from the Colorado River⁵⁷

⁵⁴ Baker interview with Atkins.

⁵⁵ Baker mentions covering with cross sets. Ibid.

⁵⁶ Bradt, “Foreign Water in the Cache La Poudre Valley,” 10.

⁵⁷ Ibid., 10; *Wyoming v. Colorado*, 259 U. S. 419 (1922). The conflict over Laramie River water in the WSSC system was already an old one by this point.

Crews cleared a little timber from the ditch right-of-way in 1923, but another thorny problem prevented further progress. Diverting more water only made sense if the WSSC could not store the snowmelt that peaked in late spring and early summer until farmers needed it most, during the critical days of July, August, and September when most crops grown in northern Colorado matured and ripened. The Grand Ditch extension thus came to wrest on plans for a new reservoir at Long Draw, just below the top of Poudre Pass.⁵⁸ Approval for this storage facility, though, proved difficult to secure; the proposed site for the reservoir lay partially within the boundaries Congress had established for Rocky Mountain National Park in 1915, so the WSSC could not make any real progress on extending the Grand Ditch until 1924, when Congress passed legislation removing the Long Draw site from the National Park.⁵⁹ Six years after Congress excluded the reservoir from Rocky, though, it also expanded the Park to encompass much of the Never Summer Range. The WSSC retained ownership over the entire seventeen miles of surveyed ditch, but the ditch route essentially became an enclave or inholding, completely surrounded by a National Park whose administrators tended to see the utilitarian canal cut into the high mountains as an affront to the beauty, sacredness, and ecological integrity they had been charged with protecting.

The water company had prepared the legal and physical infrastructure needed to finally complete a project that was entering its fifth decade. The Great Depression, though, made it difficult to finance construction. Finally, in 1933, the WSSC bought a power shovel and bulldozer, and “put a crew of men at work.” In contrast to their predecessors in the 1890s and 1900s, when muscle-powered outfits struggled to cover a few dozen feet a day under the best of

⁵⁸ Hansen, *The Water Supply and Storage Company*, 17-18.

⁵⁹ Bradt, “Foreign Water in the Cache La Poudre Valley,” 12.

circumstances, the new work gangs aided by heavy equipment could dig roughly four hundred feet of ditch per day.⁶⁰

In the next chapter, we will return to consider in greater depth the Grand Ditch's ecological and aesthetic impact on the Kawuneeche; for now, though, it suffices to consider the most important ways in which the irrigation system built with such high ambitions had changed the valley by the time of the 1930 Park boundary expansion. Start with the forests through which the ditch cut along much of its route. Construction required the clearance of trees and other plants from the right-of-way, a swath of ground that eventually stretched "50 feet on each side of the marginal limits of the ditch," and that included some 192,000 board feet of timber in 1907 alone.⁶¹ The ditch company used some of the trees thus cleared for flumes, bridges, "square-heads" or "square sets," and other structures. But the wood from the ditch route alone never could have supplied the company's estimated consumption of 100,000 to 200,000 board feet per year by 1930. The WSSC and its contractors thus brought portable sawmills into the Kawuneeche, turning some of the trees adjacent to the route into boards, planks, and posts.⁶² Each mill produced not simply lumber, but also a great deal of waste; one ranger complained in 1936, for instance, of "the enormous pile of sawdust" that had become "far too water soaked and decayed to burn in its entirety."⁶³ Ditch workers relied on forests not just for building materials,

⁶⁰ Bradt, "Foreign Water in the Cache La Poudre Valley," 14.

⁶¹ Kissler, "History of the Water Supply and Storage Company," 40; Chief of Water Rights Branch, Water Resources Division to Thomas Lucke, "Memorandum Concerning Trip Report – Chambers Lake, Long Draw Reservoir, and Grand Ditch," Aug. 8, 1986, folder 52: "L34-General," Box 11, Series 4: L24: Encroachment Files to L3417 Hiking and Riding, Rocky Mountain National Park: Land Records, 1915-1990, RMNP Archives.

⁶² Figure from J. V. Leighou to District Forester, Denver, April 29, 1930, folder 427—"Rocky Mountain National Park," box 91, "Historical Files, 1900," Arapaho-Roosevelt National Forest Papers, Record Group 95, Records of the U.S. Forest Service, NARA-Denver.

⁶³ Sterling Vaughn "Operations of the Water Supply and Storage Co., on the Grand Ditch," July 6, 1936, report no. 1, folder: "Water Supply and Storage Company," box 18, "General Correspondence Files, 1927-1953," Records of Rocky Mountain National Park, RG 79, Records of the National Park Service, NARA-Denver.

but also on occasion for food; future WSSC director Edward Baker quipped “that we didn’t object to killing a deer for a lot of food,” even though the work season on the ditch almost always ended before Colorado’s fall season on deer opened.⁶⁴

Moving from biology to hydrology, the Grand Ditch siphoned off most of the water carried by some of the Colorado River’s largest tributaries. This was, of course, precisely what the WSSC had intended the ditch to accomplish. The Fort Collins *Courier* and other papers from Larimer and Weld County frequently published reports on the winter and spring snowpack above the ditch. In February, 1905, for instance, a *Courier* item described how a WSSC caretaker had “snowshoed over from the ditch camp on the Grand to Chambers lake [sic] and called Mr. Edwards,” the company’s president, telling him that he had measured “four to five feet of snow upon the Grand and from three to four feet in the timber about Chambers lake [sic], all pretty well packed down.” The paper called the report “a welcome one, as it gives assurance that there is no lack of snow on the headwaters of the Grand and Cache la Poudre and there will be no lack of water for irrigation next summer.”⁶⁵ Two months later, the *Courier* remained enthusiastic about the summer’s prospects, declaring “The outlook for an abundance of water for this season’s farming operations ... never more favorable than at the present time.” Ditch company officials had assured a reporter that “When the banks of this ditch become settled and firmer, its capacity will be nearly double that number of feet, as the snow in the mountains will make an immense quantity of water.”⁶⁶ Four years later, the *Courier* again espoused the potential of the precipitation that fell above the Grand Ditch: “The early snow falls are packed hard and will leach off gradually during the irrigating season, while the late snows will cause the spring floods

⁶⁴ Baker interview with Atkins.

⁶⁵ *Fort Collins Weekly Courier*, Feb. 22, 1905, p. 1.

⁶⁶ *Fort Collins Weekly Courier*, April 19, 1905, p. 1.

from which the reservoirs may be filled. Everything now points to an abundance of water for next summer's farming operations with record-breaking crops, if the spring opens favorably."⁶⁷

More water for crops on the Colorado piedmont, of course, meant less water for the Grand. Diversion took life-giving water away from the Kawuneeche Valley's aquatic and terrestrial ecosystems, unleashing a string of consequences. Water tables in the Kawuneeche Valley gradually drew down in the decades after the ditch was built; peak flows in the Colorado River also decreased, an alarming development not just for invertebrates and the trout who fed upon them, but also for willows, beaver, and other members of ecological communities whose habitats depended on warm-season flooding in the riparian corridors of the Upper Colorado and its tributaries.⁶⁸

No one who set eyes on the Grand Ditch could have mistaken the conduit for a natural watercourse. In the vertical, heterogeneous world of the Colorado high country, this lateral line of homogenous width, depth, and gradient emblazoned upon the Never Summers the newfound power Americans along the Front Range sought to exert upon the Rocky Mountains above. And yet though the men in charge of the WSSC held fast to their vision of controlling nature, events on the ditch periodically undermined this conceit. Against a backdrop of near-constant conflict with the National Park Service over the ugliness of the ditch, the Grand Ditch spilled its banks repeatedly. Both deliberate releases of water (often necessitated by the WSSC's need to keep

⁶⁷ *Fort Collins Weekly Courier*, Jan. 20, 1909, p. 12.

⁶⁸ Chris Kennedy interview with author, Nov. 24, 2010, transcript in appendix of this report, audio file at RMNP Archives; Sandra Ryan and Nel Caine, *Effects of Flow Diversion on Downstream Channel Form in Mountain Streams*, Colorado Water Resources Research Institute Completion Report No. 176 (Fort Collins: Colorado Water Resources Research Institute, 1993); Jordan Clayton and Cherie Westbrook, "The Effect of the Grand Ditch on the Abundance of Benthic Invertebrates in the Colorado River, RMNP," *River Research and Applications* 24 (2008), 975-987. Scott Woods has quantified the impact at 29% of streamflow below the confluence of Baker Gulch and the Upper Colorado, and up to 60% of discharge during the summer peak; "Ecohydrology of Subalpine Wetlands in the Kawuneeche Valley, Rocky Mountain National Park, Colorado" (Ph.D. diss., Colorado State University, 2001), 1.

Long Draw Reservoir from overtopping its dam) and accidental breaches would generate heated conflict between the WSSC, on the one hand, and the NPS and other Kawuneeche Valley landowners, on the other.⁶⁹ Such reassertions of disorder over order—of man-made improvements causing unprecedented kinds of environmental harm—belied the progressive narrative that irrigation advocates from the 1880s onward had told so earnestly. In this tale of good works, water diversion would force the Colorado River to abandon its wasteful ways and instead “do duty.” By advancing a Jeffersonian vision of independent yeomen farmers making the semi-arid plains of Colorado “blossom as the rose,” the Grand Ditch would transform nature’s bounty into wealth and goodness. Or so, at least, the story went. In truth, the WSSC’s vision for the Kawuneeche landscape was hotly contested by other stakeholders who blamed the Grand Ditch for causing aesthetic, economic, and ecological harm to the lands below.

Homesteading the Valley

Well after the young University of Wisconsin historian Frederick Jackson Turner announced to a packed meeting of the American Historical Association in 1893 that the American frontier had closed, the floor of the Kawuneeche remained an open and untamed land—one that still seemed very much an archetypal western frontier to settlers and travelers alike. The men, women, and children who sought to tame this frontier by building homes and farms comprised just one small vector in a much broader boom in homesteading throughout the public lands states of the West. Between the passage of the Homestead Act in 1862 and 1900,

⁶⁹ The NPS’s Grand Ditch Breach Coordinator, Paul McLaughlin, explains that the WSSC sometimes intentionally initiated “debris flows . . . by simply carving a notch into the ditch sidewall producing a ‘wasteway’ or by dumping concentrated flows of water down one or two creek channels (greatly exceeding the channels capacity) and thus in either case creating a flood of water, trees, boulders, and other sediment. . . . In some cases water also apparently appeared as high-volume ‘springs’ erupting from the hillside downhill from the ditch and creating mud/debris flows.” Personal communication with author, Feb. 1, 2011.

1.4 million people had filed claims under the act—an average of just less than 37,000 per year. Between 1900 and 1914, by contrast, would-be settlers filed about 1 million homestead claims—an average of almost 77,000 per year, leading historian Walter Nugent to declare the early twentieth century as “the true heyday of homesteading.” Prospective settlers not only filed claims at higher rates than ever before; a majority also succeeded at fulfilling the terms of the Homestead Act and receiving patents to their land. In the high-watermark year of 1913 alone, 60,000 homestead entries covering almost 11 million acres of land “were proved up.” Nationally, the pace of homesteading began to decline during World War I before setting into terminal decline in the 1920s.⁷⁰

A few statistics on homesteading in the Kawuneeche provide insights into local variations on national patterns. About forty-two homestead claims were filed to valley lands. The first settler, John Hedrick, claimed to have entered his land on July 18, 1880, and the last, Clarence Lee, entered his land in June of 1927.⁷¹ Seven other people joined Hedrick in filing claims during the 1880s, with six of them entering the valley *after* the mining rush showed clear signs of collapsing. Only six settlers filed entry papers during the depression-wracked 1890s. Nine followed in the 1900s, twelve in the 1910s, and seven in the 1920s—numbers that suggest that the Kawuneeche’s popularity among settlers peaked just as homesteading in the United States more broadly had begun to wain. Several women filed homestead claims: Fannie Quincy; Mary Crandall, Annie Harbison, Kate Harbison, Mary Harbison, and Josephine Young all presented homestead claims. Mary Harbison, having been born in Nova Scotia, numbered among the unexpectedly small number of immigrant claimants, joined by Markus Christian Christiansen, a

⁷⁰ Walter T. K. Nugent, *Into the West: The Story of Its People* (New York: Knopf, 1999), 131-32, 182.

⁷¹ Hedrick did not file his claim until 1884, but he claimed to have entered in 1880.

Dane, and a trio of Germans: Joseph Fleshuts, John Holzwarth, and John Rausch.⁷² The American-born majority of homesteaders mostly came from either the older states of the union, such as Massachusetts, Virginia, and New York, or the Midwest, with a total of four homesteaders hailing from Illinois and at least one each from Indiana, Ohio, Minnesota, Michigan, Kansas, Iowa, Missouri, and Nebraska. Harry Wiswall is the only settler known to have been born in Colorado. The settlers' ages at the time of entry were similarly mixed; the youngest was 24 years old, and the oldest was 71. Some had been widowed; more were single or married. Several had children, but none evidently intended to support a large family on the Kawuneeche: Leon Giggey's household of five—himself, his wife, and three children—is the largest recorded in the homesteading documents.⁷³

Many of the problems that had doomed mining—particularly the valley's distance from railroad facilities and markets, together with its harsh and unpredictable weather—continued to make the region a very difficult place for Euroamericans to inhabit. Hallowed nationalist myths taught Americans to expect that Providence (or, what was often the same thing, beneficent Nature) had so blessed the United States that western lands could be improved to perfection with only a little work. Yet homesteading in the valley regularly failed. Almost half of those who homesteaded the Kawuneeche sooner or later followed in the footsteps of the miners and townsfolk who had abandoned the valley in the mid-1880s. The Kawuneeche, in short, proved no garden.⁷⁴

⁷² Harbison moved to the US “before she was 21 years of age,” and her father took out naturalization papers in Nebraska when she was 20. In 1867, she married Andrew Harbison, a Pennsylvanian who had served for four years in the Union Army during the Civil War. Affidavit of Mary E. Harbison, July 22, 1908 in Mary E. Harbison File, GLO Records, copies available at RMNP Archives.

⁷³ All of the information in this paragraph comes from a table assembled by researcher Brandon Luedtke from homesteading records (see appendix 2), most of which are cited in the section below.

⁷⁴ For cases in which the final decision of the GLO is clear in cases involving the Homestead Act, 22 claimants succeeded and 18 failed. Five others purchased land from the government outright.

Few generalities comfortably describe the homesteading process in the valley. Some homesteaders, for instance, desperately wanted to start new lives along the North Fork and its tributaries, and they focused their efforts accordingly. Others, by contrast, treated the lands on which they had filed papers as supplements, sidelights, or pastoral means to touristic ends, particularly after the establishment of Rocky Mountain National Park in 1915. Given such disparities in circumstances, intent, and historical context, it seems more fruitful to view settlement as a complex and multifarious process shaped by the intersection of settler motivations and intentions, the Kawuneeche's physical and human geography, and the shifting constraints and opportunities settlers encountered in and beyond the valley.

Those who settled in the lower stretches of the valley, on the outskirts of Grand Lake, found a ready market in that town for their produce and labor, as well as a vibrant social center. Those who homesteaded further up the valley, meanwhile, experienced greater isolation, which may have appealed to some, and higher transportation costs, which could not have appealed to anyone. Homesteads differed not only in their relationship to other places, but also in their topography and ecology. Virtually every parcel of land on which papers were filed lay on the valley floor. But given the mismatch between the rectilinear grid United States surveyors imposed on the Kawuneeche, and the valley's unruly topography, many tracts included rocky ridges or steep slopes. Even the bottomlands varied considerably, though they generally contained the following positive attributes: a stretch of the Colorado River (or, in a few cases, another large stream such as the Tonahutu); a stretch of meadow comprising a mixture of plants settlers typically called "native grass" or "native hay"; a few dozen acres of willow thicket; and

See table in appendix 2. On the West as a garden, see Henry Nash Smith, *Virgin Land: The American West as Symbol and Myth* (Cambridge, Mass.: Harvard University Press, 1950).

at least a dozen acres of timber, virtually always lodgepole or “jack” pines that had grown since the large fires of the 1860s, ‘70s, and ‘80s.⁷⁵

A final element of complexity resulted from the larger events and processes in which homesteaders and homesteading families found their lives enmeshed. Consider, for instance, how World War I—both as an international conflict and as a crucial vector of change on the home front—affected the lives of three groups of settlers: After Colorado voters enacted prohibition in the course of a broader war-time shift toward more socially restrictive legislation, John Holzwarth resolved to sell his Denver saloon in order to pursue his long-time dream of becoming a rancher in the high country of Grand County; Markus Christiansen, who rented a farm four miles south of Fort Collins but spent most of his summers during the war on his Kawuneeche homestead, astutely used the war-time Farm Labor Act to gain an extension from the General Land Office that gave him the extra time he needed to prove up his claim successfully; and Clinton DeWitt, a young Oklahoman who enlisted in the Marines in Denver just as World War I was drawing to a close, filed his initial homestead papers from the Mare Island Marine Base in California.⁷⁶

Varying circumstances, geographies, and intentions led to much variety in the Kawuneeche’s homesteading history. Even so, a few generalities bear mention. First, the movement of farmers, ranchers, and others into the valley comprised a folk migration. No railroad or land company promoted homesteading in the Kawuneeche; no pamphlets, articles, or books boosted the valley’s agricultural promise to unsuspecting settlers. Second, only a peculiarly sanguine or stupid settler could have envisioned the Kawuneeche as a good place to farm. On the Great Plains during these same years in the late 1800s and early 1900s, a popular

⁷⁵ See GLO case files.

⁷⁶ On Holzwarth, see below; on Christiansen and DeWitt, see their respective GLO case files.

doctrine couched in pseudo-science led homesteaders to believe that “rain follows the plow”; no Rocky-Mountain counterpart emerged, though, tempting homesteaders in the valley into the delusion that cultivation would bring warmer weather and longer growing seasons. The Kawuneeche remained a marginal agricultural country at best, and those who filed homestead claims to its lands must certainly have expected that they would have to work hard and to draw upon a variety of resources and markets if they were to find the independence most hoped to find on this last-chance frontier tucked between the Front Range and the Never Summers.

By and large, Kawuneeche Valley settlers initially pursued a model of mixed family farming premised on some combination of gardening, hay cultivation, livestock husbandry, the raising of poultry and dairy cattle, and occasional migrations elsewhere to earn wages or to barter their labor for other goods and services.⁷⁷ Some would add housing, feeding, guiding, and entertaining tourists to the list, especially after Rocky Mountain National Park arrived on their doorsteps.

In the vast majority of cases, settlers invoked the Homestead Act of 1862 in their efforts to turn public lands in the valley into private property.⁷⁸ The Homestead Act enabled prospective settlers—defined by the law as any person of either sex and any race who: a) was either a “head of family,” a veteran of the U.S. military, or twenty-one years of age or older; b) and either held U.S. citizenship, or had filed a declaration of their intention to become a U.S. citizen—to claim up to 160 acres of public lands, provided the settler met the following

⁷⁷ For more on distinctions between farming and ranching, see Karen Merrill, *Public Lands and Political Meaning: Ranchers, the Government, and the Property Between Them* (Berkeley: University of California Press, 2002), 40-42. A quote from William Ellsworth Smythe’s reclamation tract, *The Conquest of Arid America*, epitomizes this line of thinking: “Civilization is driving barbarism before it,” Smythe declared. “The conflict is between the civilization of irrigated America and the barbarism of cattle ranching” [quoted in *ibid.*, 41].

⁷⁸ The exceptions consisted of purchases of pre-emption claims, isolated tract sales, and one stock-raising homestead. See GLO cases for Charles Clark, Leon Giggey, Lucian Husted, Arthur Pratt, and Christian Young.

conditions: they had to file an entry claim and pay a fee (initially set at \$10); they had to make improvements to the land within a period of five years sufficient to demonstrate that they had either “resided upon or cultivated” the tract, with any absence from the land in excess of six months offering the government grounds to invalidate the claim; and they had to file a final proof in which they established that they had fulfilled the provisions of the act, offered the names of witnesses the Government Land Office would question regarding the claim, and paid a filing fee. If all went well, settlers “proved up” their claims and received a patent to their homesteads, which they could subsequently sell or otherwise exchange just like any other piece of land held in fee simple.⁷⁹

Settlers generally sought access to the Colorado River or another source of water for irrigation and household use. The most desirable riparian areas in the Kawuneeche offered a mix of vegetation types: timber for fuel and lumber, and meadow grasses, which provided pasture for livestock during the summer and hay to feed domesticated animals through the valley’s long, hard winters. By the 1910s, more than a dozen homesteads had been carved out of the valley floor. Most of these were strung out along a contiguous strip of bottomland stretching north from Grand Lake. The main outliers consisted of “Squeaky” Bob Wheeler’s famous Hotel de Hardscrabble, renamed the Phantom Valley Ranch by a subsequent owner, at the northern tip of the valley below Milner Pass; the Holzwarth family’s Neversummer Ranch, established in the 1910s about a mile and a half downstream from Squeaky Bob’s; and Sam Stone’s place in Big Meadows, several miles east of the Colorado River.

The few settlers who purchased their land from the government outright—and the somewhat larger group who bought land from those who had proven up their homestead

⁷⁹ Act of May 20, 1862 (Homestead Act), Public Law 37-64, May 20, 1862, Record Group 11, General Records of the United States Government, NARA-DC, online at: <http://www.ourdocuments.gov/doc.php?doc=31> (accessed August 23, 2011).

claims—could use their land in practically any manner they wished. Those filing homestead claims, by contrast, had to focus their efforts on the two broad categories of improvement required by the Homestead Act: building a residence and cultivating the land.

Homesteaders typically constructed their homes from lodgepole pine; they cut poles and hewed logs for construction either from the woodlands contained on their own parcels, or from forests on adjoining public lands. Settlers tended to start small, with rough log cabins offering just a few hundred square feet of interior space, though a few settlers erected larger cabins, such as the four-room “Log House” of 20 feet by 40 feet John Holzwarth and his family built on their homestead in the early 1920s.⁸⁰ Early homesteaders often covered their cabins with simple dirt roofs, but most of those who followed them into the country evidently felt that the added comfort and security shingle roofs provided were worth the extra time and expense involved.

⁸⁰ Morse Cowgill, Testimony of Witness, Final Proof, Nov. 18, 1922, Holzwarth case.



The Holzwarth family, ca. 1920. The Holzwarths were one of several families who attempted to homestead in the Kawuneeche; this photo shows the family's ties to their German heritage. It also shows the family enjoying a modicum of prosperity that few other settlers would enjoy. Photographer unknown, n.d., catalog #10-H-2, negative #717, RMNP Photo Collection.

The few documents that record details about cabin interiors suggest that most homesteaders dwelled in unadorned simplicity. John Hedrick, the early homesteader whose truck garden provided food for people and feed for livestock in and around the North Fork Mines, had initially built a 24' x 28' feet structure "of hewed logs" to shelter his family; by the time the Hedricks sought to prove up their claim, though, they had turned their original house into a hay barn, then moved into a "dwelling house" of 12 feet by 14 feet. The family furnished this humble cabin with "One cook stove, one heating stove, bedsteads, tables, chairs, and dishes

and cooking utensils,” all of which the family had possessed “since settlement.”⁸¹ Markus Christiansen described the contents of his 16’ x 24’ cabin to federal investigators: “Why we have a good big table, 6 dining room chairs, 2 rocking chairs, 1 good bed, mattress, bedding and a range stove. We have a tent and that has a home-made bed.”⁸² Christiansen had probably hauled most of these items up to his homestead from his house near Fort Collins, when he drove his team of draught horses up the Continental Divide and into the Kawuneeche.

The mentions by Hedrick and Christiansen of stoves hints at both the environmental and social dimensions of settlement. Stoves needed fuel. Most homesteaders undoubtedly kept their homefires burning using wood cut from their own properties. A few homesteading families, though, also cut large quantities of cord wood from the National Park according to special permit; those near National Forest lands presumably also cut at least some fuelwood from the public domain.⁸³

For women in the Kawuneeche, stoves may have epitomized their experiences of ceaseless labor for all-too-limited rewards. “You never run out of work on a farm—that’s for sure,” remarked one ranch wife from Northwestern Colorado, and the same undoubtedly held true in the Kawuneeche.⁸⁴ The cooking and cleaning never seemed to end. Women faced particularly grueling days of hot and hard work over stoves and ovens during the spring or summer round-up as well as the fall haying season, when a handful of neighbors and hired hands

⁸¹ John Hedrick, “Testimony of Claimant,” Oct. 4, 1887, John Hedrick case, GLO Records.

⁸² Mark Christiansen deposition, Feb. 13, 1920, Mark Christiansen case, GLO Records.

⁸³ In September of 1916, for instance, RMNP Superintendent Trowbridge gave a permit to H. M. Harbison to cut 100 cords of firewood for the price of \$50; this was far in excess of what the entire Harbison family could have burned, so at least some of this firewood was evidently sold. SMR for Aug., 1916, Sept. 6, 1916, RMNP Archives.

⁸⁴ Mary Birovchak Levkulich interview in Julie Jones-Eddy, *Homesteading Women: An Oral History of Colorado, 1890-1950* (New York: Twayne, 1992), 66.

joined a homestead's men and boys to put up the summer's growth of grass.⁸⁵ In the Kawuneeche, as in the ranch country beyond Middle Park, women literally kept the home-fires burning. Baking in finicky woodstoves at high altitude required considerable skill; "You had to be a marvel at knowing your stove," one woman recalled. "There was no indicator on most ovens as to the temperature in the oven, so if you were baking a cake, you made a little 'try cake' to begin with. You had a little pan and you'd put some batter in that, and if it burned you knew it was too hot then. If it didn't get done, then you waited until the oven was right. But you learned your stove."⁸⁶ The Kawuneeche, like most American frontiers, was sometimes a gender-bending sort of place; most settlers presumably viewed cooking as women's work, but many male homesteaders—bachelors, widowers, and husbands whose wives remained elsewhere while they made a start in the Kawuneeche—had to cook for themselves or for each other, a situation that must have led to many culinary misadventures as men unaccustomed to making their own food struggled to learn their stoves.

Settlers needed water even more than heat. Some dug shallow wells to tap into the relatively shallow water table on the valley bottom. Others used ditches to carry water for domestic purposes from nearby streams, and such ditches sometimes helped to irrigate crops, too.⁸⁷ As for the wastes that settler households inevitably generated, no documents mention outhouses, incinerators, trash heaps, or other means of disposing of waste.

⁸⁵ As Stella La Force Rector of the Rangeley area explained, "the high-country ranches, you didn't really have all that much haying, and we probably had maybe three" hands then. Interview in *ibid.*, 38. CeCelia Sullivan Knott of the Craig area recalled that "You may work in a hay field all day, *but* you also came in and you got the meals, not just for you and your family [but] for whatever men there were." CeCelia Sullivan Knott interview in *ibid.*, 60.

⁸⁶ Janet Mortimer Eberle interview in *ibid.*, 52. For a general account of women and cooking, see Ruth Schwartz Cohen, *More Work for Mother: The Ironies of Household Technology from the Open Hearth to the Microwave* (New York: Basic Books, 1983).

⁸⁷ Benjamin J. Mitchell affidavit, Feb. 9, 1904, Mitchell case, GLO Records.

Federal regulations required homesteaders not simply to reside on their claims, but also to cultivate them. Moreover, settlers needed vegetables and meat to feed themselves and their families, hay and vegetables for their livestock, and other produce to sell or exchange for goods they needed or desired. Homesteaders quickly discovered, though, that improving the Kawuneeche would not be easy. Virtually every settler undoubtedly brought at least a few animals to the valley, intending to use some creatures as work animals and others as a source of food. From June onward, several cattle, horses, or other livestock could feed on the meadows virtually every settler made sure to settle on or near; homesteaders also took care to lay up enough “native hay” from these pastures to last their livestock through the ensuing winter. Yet because few settlers managed to engross more than 100 acres of grass within the 160-acre-maximum established by the Homestead Act and many homesteads lay on parcels featuring even less native pasture, homesteaders who aspired to economic viability soon began modifying their lands.⁸⁸

Willow grew prolifically in the Colorado River bottomlands, forming dense thickets; the leaves and shoots of this plant provided an important source of nutrition for elk, deer, beaver, and other wild creatures. But settlers believed the plants to be worthless as feed for livestock. Worse, willow monopolized large stretches of many homesteads. One way for a settler to increase his or her supply of pasture and hay, then, was to grub out or clear willow, thereby increasing the amount of ground on which grass could grow. A smaller number of settlers sought to create more pasture for grazing or hay by clearing stretches of lodgepole pine.⁸⁹

A second common way settlers modified the landscape was to replace native meadow plants with exotic species that promised higher and more consistent yields, and with which

⁸⁸ Charles Hertel claimed to have “About 100 acres of hay,” and the “balance in pasture and timber.” Hertel Case, *ibid.*

⁸⁹ Bob Wheeler was among this latter group.

domesticated livestock were generally familiar. Virtually all soils in the valley's limited grasslands were heavy and wet, so plowing up the local grasses struck most settlers as impracticable or unwise. Instead, homesteaders tended to disc their meadows before planting rye, timothy, or clover—all Old-World grasses that had co-evolved over millennia with cows, horses, and other domesticated livestock.⁹⁰

Settlers grubbed out willows and disked in what some called “tame grass” or “tame hay,” but some also modified meadowlands in a third and even more intensive manner.⁹¹ Complex and highly variable hydrological systems covered the valley floor; by transforming the local hydrology, homesteaders attempted to create more suitable conditions for growing grass. Some sought to bring more water to their fields via irrigation ditches; a smaller number of others eventually dug drainage ditches to foster drier conditions on boggy, water-logged soils.⁹² Homesteaders typically obtained about half a ton of hay from unaltered native meadows.⁹³ They could get a ton of hay per year from lands cultivated with exotic grasses, by contrast, and sometimes even more if they irrigated or drained their lands.⁹⁴

Settlers virtually always modified meadows, even if such modifications consisted only of cutting and baling the warm season's growth. A few also engaged in more limited but also more elaborate changes to the land by planting gardens. John Hedrick was the pioneer gardener of the Kawuneeche, growing turnips and “hardy vegetables” in the 1880s on “about an acre” of land

⁹⁰ On the continuing impact of exotic grasses in the Kawuneeche Valley bottomlands, see David Cooper interview with author, Oct. 1, 2010, transcript in rear of this report and on file at RMNP-Archives.

⁹¹ On “tame grass,” see Cowgill testimony, Holzwarth case, GLO Records; on “tame hay,” see testimony of Jacob Jones, homestead proof, June 10, 1885, Jacob Jones case, GLO Records.

⁹² Many GLO cases mention irrigation ditches; none mention drainage canals, as these were evidently a later addition.

⁹³ Estimates based on statistics from GLO Records.

⁹⁴ Ibid.

that he “spaded” by hand.⁹⁵ A minority of other homesteaders maintained garden plots on which they grew crops that they ate themselves, sold or bartered with others in the valley or Grand Lake, or possibly fed to their livestock. Asked by an attorney in a hearing concerning the homestead claim filed by Benjamin Mitchell to lands adjacent to the North Inlet of Grand Lake what one crops one could grow in the Kawuneeche, long-time area resident Henry Lehman painted an almost cornucopian image: “You can raise parsnips, turnips, carrots, you can raise lettuce of the finest, you can raise timothy, and oats, they have hay, you can raise cauliflower, and cabbage, raddishes [sic] and several other things.”⁹⁶ Lehman’s list may have been overly hopeful, but even on a parcel more than 9,000 feet above sea level, Robert Wheeler claimed to have planted “a half acre of garden growing lettuce, radishes, onions, and rhubarb each year.”⁹⁷

Only some settlers planted gardens, but virtually all lent their muscle and ingenuity to erect structures on their lands. Most of these improvements reflected and facilitated the settlers’ dual dependence on hay and domesticated animals. Homesteaders needed to protect their livestock and store feed to sustain them throughout the year. They thus built barns, sheds, and stables of varying dimensions and types. Corrals were also common on Kawuneeche homesteads, and most settlers slowly began to erect fences on portions of their land (though few decided to fence in their land completely prior to filing their final proofs on their homestead claims). Root cellars and chicken coops rounded out the list of structures prospective homesteaders commonly enumerated in their efforts to convince federal officials that they had succeeded at improving their lands by cultivation.⁹⁸ When John Holzwarth listed on his final proof that he and his family had built a “cabin, cellar, horse barn, cattle barn, chicken house” and

⁹⁵ Hedrick, “Testimony of Claimant.”

⁹⁶ Henry Lehman testimony, Dec. 11, 1907, *U.S. vs. Benjamin Mitchell*, hearing conducted in Hot Sulphur Springs, Colo., transcript in Mitchell case, *ibid.*

⁹⁷ Robert Wheeler affidavit, June 13, 1918, in Robert Wheeler Case, *ibid.*

⁹⁸ See GLO Records.

fence enclosing 30 acres, he established beyond a shadow of a doubt that he had fulfilled his obligations under the Homestead Act.⁹⁹ Few settlers had as much to show for their trouble after several years of laboring in the Kawuneeche, but most who proved up their homestead claims managed at least to build a barn and fence some pasture.

Settlers frequently helped each other to erect outbuildings and fences, just as they sometimes lent each other a hand in building houses and laying up hay.¹⁰⁰ Homesteaders evidently obtained not only labor, but most building supplies from the local area. Lodgepole pine from their own tracts sufficed for logs, poles, rails, and posts, though some structures almost surely required planks or boards purchased from sawmills in the Kawuneeche or a Grand Lake lumber yard, as well as nails, hinges, bolts, wire, and other metal products hauled in from the outside world.¹⁰¹

Both the scale and the character of the resulting operations cut against the prevailing trend of agricultural modernization in the late-nineteenth- and early-twentieth-century United States.¹⁰² Extant documents show that no homesteader raised more than 100 acres of hay or more than 100 head of cattle during the early years of homesteading.¹⁰³ Even John Holzwarth, who had the benefit of his full-grown son's labor as well as previous experience in the ranching business, had just 12 acres of hay under cultivation by his fifth season in the valley; seven years after first settling on his tract, John Hedrick was able to keep just "One horse, one mule, one cow

⁹⁹ Holzwarth case, GLO Records.

¹⁰⁰ Albert House, for instance, helped Henry Nicholls build his house. Final Proof, Testimony of Witness, Nov. 18, 1922, Henry Nicholls Case, *ibid*.

¹⁰¹ Numerous homestead cases make it clear that settlers obtained wood from their own parcels, which almost invariably included lodgepole forests. Other trees whose wood was suitable for lumber, such as subalpine fir and Engelmann spruce, grew at higher elevations and in shady areas.

¹⁰² Deborah Kay Fitzgerald, *Every Farm a Factory: The Industrial Ideal in American Agriculture* (New Haven, Ct.: Yale University Press, 2003).

¹⁰³ Superintendent Trowbridge issued a special permit to "J. Chrisensen [Julius Christiansen] for passage of approximately 100 head of cattle over park territory." SMR for June, 1916, July 5, 1916.

and two heiffers,” as well as “one dozen chickens,” and he raised just 20 tons of hay, one ton of turnips, and “several bushels” of vegetables.¹⁰⁴

Homesteading the Kawuneeche, in short, proved a difficult and uncertain endeavor. Two types of documents settlers submitted to the General Land Office—the first requesting an extension to the five-year time period the Homestead Act stipulated for submitting final proofs to a land claim, and the second requesting a reduction in the number of acres a settler claimed (which, in turn, obligated them place a proportionally smaller amount of land under cultivation)--provided grim takes on the environmental obstacles against which settlers struggled.

In contrast to mineral-rush narratives that portrayed the Kawuneeche as a land of fertile pastures and prolific forests, extension and reduction requests in acreage spun narratives of trial and tribulation. Mark Christiansen explained that “snow falls to a great depth making it impossible” to reach his claim “with a team during the winter and until late in the spring.” As for summer, it was short; “snow falls early, making it impossible to get a team out late in the fall.” Christiansen explained that “climatic conditions in the vicinity of this land ... make it a hardship to reside on the land for a greater period of each year than five or six months” per year. As Christiansen bluntly put it in a deposition, “I couldn’t stand to stay there it was snowy and the snow was deep.”¹⁰⁵ Charles Seymour claimed of his parcel that “Snow lies on ground an average of 180 days of the year—[illeg.] often 200,” and the area “never” experienced “more than 75 frostless nights.”¹⁰⁶ A former cook of Clinton DeWitt’s testified that after DeWitt filed his homestead entry papers while on active duty for the Marine Corps in Mare Island, California, he returned to Colorado in October. That month “here was story all through the fore part and

¹⁰⁴ Cowgill testimony, Holzwarth case; Hedrick, “Testimony of Claimant.”

¹⁰⁵ Christiansen deposition.

¹⁰⁶ Charles Seymour, “Application for Reduction of the Required Area of Cultivation,” Sept. 26, 1923, Seymour case, *ibid.*

middle of the month, then on Oct. 25th snow came which never left the ground, then in fore part of November there came an unusual[ly] heavy fall of snow so that there has been no weather since he came home in which it has been possible for a man to get out into the timber and get material and put up a house in which it would be safe to live without endangering his life.”¹⁰⁷ John Holzwarth joined DeWitt and Christiansen in lamenting the troubles the Kawuneeche’s climate caused homesteaders: “Owing to the extremely high altitude at which this land is situated,” Holzwarth informed the land office, “the growing season is short and the nights throughout that season of the year are very cool so that grains and other farm products will not mature and hay and pasture are the only crops that can be grown and the land is only fit for the growing of stock.”¹⁰⁸

While many homesteaders complained of the climate, others assailed the landscape. Allen Hatter, for instance, described his parcel in extremely grim terms. One portion comprised “rough rocky hillside,” with “absolutely no tillable land.” Another section consisted “nearly all [of] hillside” and a “small strip [of] swamp.” Other parts of Hatter’s parcel consisted of “flat, swampy [ground featuring], many beaver dams and a natural sod too heavy and too deep to be cultivated.” Hatter concluded his extension request by critiquing both the land and the climate of the Kawuneeche: “Owing to the high altitude, short seasons and the cold nights and the character and the surface of the soil it is impossible to till the land and raise ordinary farm crops.”¹⁰⁹

Some settlers even complained that the Kawuneeche’s wild creatures made cultivation impossible. Beaver caused particular alarm. A government inspector painted a grim view of the

¹⁰⁷ Josephine Burton to Mary Wolfe Dargin, March 24, 1920, in Clinton DeWitt case, *ibid.*

¹⁰⁸ John G. Holzwarth, application for reduction of the required area of cultivation, July 6, 1922, in Holzwarth case, *ibid.*

¹⁰⁹ Allen G. Hatter, application for reduction of the required area of cultivation, Oct. 29, 1923, in Allen Hatter case, *ibid.*

rodents' work along a stretch of Baker Creek, which Charles Clark wished to purchase from the federal government for fishing purposes. "This creek has been damed [sic] up by beavers in such a manner as to make this land a swamp," making it "not very suitable for stock," and hence not suitable for homesteading.¹¹⁰ Clinton DeWitt had laboriously "drained," "disced and drug" 23 acres of meadow in 1920 and 1921. In 1922, he harvested 15 tons of hay from these lands, but in 1923, he testified in his final proof, "Beavers flooded [DeWitt's] meadow," reducing his harvest to just 10 tons.¹¹¹ Beavers gave DeWitt and other settlers headaches, but the creatures drove Harry Bruce Wiswall into paroxysms of rage. In his "Application for Reduction of the Required Area of Cultivation," Wiswall blamed beavers for placing him in a seemingly impossible predicament:

The beaver have so infested the valley in which my homestead lies that practically all of the hay land is continually flooded and cut up by beaver runs. The state fish and game commission refuse to issue me permits to rid myself of the pest.

Tearing out the dams does no good. I tried it repeatedly and they [illeg.] them up over night. I fully knew that there were beaver to contend with but labored under the impression that the State Game Laws meant what they said. 'Permits will be issued to land owners who can prove that the beaver are interfering with cultivation.' In order to comply with the homestead laws I must break the State Law.

¹¹⁰ Ralph S. Kelley to Register of U.S. Land Office, Denver, May 6, 1926, Charles Clark case, *ibid.*

¹¹¹ Clinton DeWitt, final proof: testimony of claimant, Dec. 27, 1923, Clinton DeWitt case, *ibid.*

Wiswall optimistically concluded that his parcel contained “over 10 acres that can be cultivated when the beaver are exterminated”; the land office approved his application for a reduction in acreage, and Wiswall eventually proved up his claim.¹¹²

The formidable biological, ecological, and climatic problems that potential cultivators and settlers faced in the Kawuneeche often had severe economic consequences. Indeed, most of those who received patents to their lands benefited from sympathetic interpretations of federal law by officials at the General Land Office. From the 1910s onward, the GLO typically decided that livestock-raising constituted a form of “cultivation” under the Homestead Act.¹¹³

A number of factors led would-be settlers to abandon or relinquish their claims. On a few occasions, parties hoping to acquire title for themselves to lands on which others had filed disputed whether the applicant had fulfilled the provisions of the Homestead Act. In 1920, Allen G. Hatter, for instance, successfully convinced the land office to void Edwin E. M. Garlough’s claim; five years later, Hatter received a patent on the very same tract.¹¹⁴ Other entrymen and entrywomen ran afoul of the Homestead Act due to hardship; Abram Macy, for instance, filed on 160 acres of land on July 12, 1890. The following spring, Macy requested permission from the land office to take a nine-month leave of absence because of “sickness and old age[. H]aving no person to live with me,” Macy explained, “I have been obliged to move to the town of Grand Lake to get cared for and to have proper treatment.” Though government officials took pity on Macy, his illness displayed no such mercy. Less than a month after informing the land office of his infirmity, Macy died.¹¹⁵

¹¹² Harry B. Wiswall, “Application for Reduction of the Required Area of Cultivation,” April 13, 1921, Wiswall Case, *ibid.*

¹¹³ See citations below for evidence.

¹¹⁴ Edwin E. Garlough case, GLO Records; Allen G. Hatter case, *ibid.*

¹¹⁵ Abram Macy to Register and Receiver, Central City Land Office, March 19, 1891, in Abram Macy case, *ibid.*

Sickness and the hostile intentions of neighbors prevented Macy and Garlough from patenting their claims. Other settlers, meanwhile, simply gave up, presumably because the travails of transforming a high mountain valley into a productive farming region proved too overwhelming. Robert A. Harbison, for instance, explained that he had “abandoned” his claim “for the reason that the character of the land is such that it will not produce an agricultural crop in paying quantity and I am unable to make a living from said land, having no other means than my own labor, and the expense of putting said land into condition to produce paying crops would be such that I am unable to accomplish it.”¹¹⁶ Some parcels proved so recalcitrant that multiple parties tried and failed to homestead them. One tract outlasted a total of five unsuccessful claimants dating back to 1889; only in 1920 would Andrew Christiansen finally prove up his claim and receive a patent to the land.¹¹⁷

Successful homesteaders usually owed their success to at least one of several factors. First, those who participated in chain migrations to the Kawuneeche seemed to have fared better than those who came to the valley just with their own nuclear families (as mentioned before, the size of the families who homesteaded in the valley were unusually small, and extended families living under roof were very rare). Andrew Christiansen and his father, Mark Christiansen, both proved up their claims, possibly with the help of Mark’s brother Julius, who also lived in the area; Clinton DeWitt and his father, Edwin DeWitt, also succeeded at gaining title to their homesteads; Benjamin Mitchell received a favorable ruling from the GLO five months later after his mother, Polly Ann Mitchell, proved up the claim entered upon by her husband, James; and Annie and Kate Harbison gained title to adjacent parcels (though in subsequent years, their

¹¹⁶ Robert’s mother, Mary Harbison, would file on the tract the day Robert relinquished it, but her entry was later canceled; the land was successfully patented by Edwin Dewitt fifteen years after Robert Harbison abandoned the claim, in 1923. Robert A. Harbison case, *ibid.*; Mary Harbison case, *ibid.*; Edwin Dewitt case, *ibid.*

¹¹⁷ Andrew Christiansen case, *ibid.*

brother, Robert, and mother, Mary, both relinquished their claims to lands in the Kawuneeche).¹¹⁸

A second commonality of some successful claimants was their status as veterans of the U.S. military. Ironically, those who served in the Civil War seem to have received no preferment in their cases during the 1800s and very early 1900s. By the 1920s, though, GLO officials allowed veterans to count their military service toward the Homestead Act's residency requirement, and by 1923 or so, it no longer appears to have mattered whether a veteran had even placed his land under some sort of recognizable cultivation. Henry Rhone, for instance, had built a home on his parcel, but had done nothing to cultivate it. The GLO nonetheless accepted his final proof, even though Rhone and his wife lived in Grand Lake for three months each summer, and Mrs. Rhone lived on the homestead rarely if at all.¹¹⁹

A third commonality of many successful homestead claimants was their resourcefulness in supplementing farming and ranching on the parcels they sought to patent with other work. The valley's first homesteader, for instance, Jacob Jones, left his homestead for a month in the summer of 1883, "for the express purpose of earning money with which to live and to make improvements upon said land." He followed up this stint by carrying mail from Grand Lake over the Never Summer Range to Teller City. Jones attempted to reassure land office bureaucrats: "I never considered any other place as my place of residence although I was obliged to live more or less of my time at both Grand Lake and Teller while carrying the mail."¹²⁰ John Hedrick, for his part, had been "employed for various parties" on several stints outside the Kawuneeche between 1880 and 1886, leaving his family behind on their homestead while he "worked for different parties, cut hay, cut wood, carried mail, and did odd jobs." As winter descended in 1886,

¹¹⁸ GLO Records.

¹¹⁹ Henry Rhone case, *ibid.*; Clinton DeWitt case, *ibid.*

¹²⁰ Jones case, *ibid.*

Hedrick and his wife realized that “They could not stay there [in the Kawuneeche] as I had no provisions to last them through the winter and could get none there in the winter.” Finding themselves “obliged to seek employment as they could not make a living on the land,” the Hedricks moved down the Grand River to Kremmling, where Hedrick found work with the Union Pacific Railroad. Whether as a result of their poverty or some other cause, the Hedricks’ young daughter took sick and died that spring.¹²¹ A few years later, in the early 1890s, Benjamin Mitchell left his homestead to trap on St. Louis Creek, on the western edge of Middle Park; in subsequent years, he “worked on a ditch for five months” at Willow Creek, then returned again to trap on St. Louis Creek for five months. After returning to his homestead, Mitchell killed a man in a fight. After serving near three years in the state penitentiary for voluntary manslaughter, he came back to the Kawuneeche, but only after gathering up his children, whom he described as having been “here, there and everywhere and finally busted up and scattered” during his incarceration. Freedom brought no relief from economic struggle, and Mitchell had to leave his claim to find work, mostly on ranches, while his children lived on his mother’s homestead in the valley.¹²²

The passage of time did little to change the equation: most successful homesteaders still found themselves needing to leave in search of wages at one point or another. Robert “Squeaky Bob” Wheeler left his homestead in successive winters to work as a cook in Estes Park, a laborer in Estes Park, a carpenter on the Grand Ditch, an unspecified job “at Schnoor’s saw mill” (possibly run by Henry Schnoor, a Kawuneeche Valley settler), and to pursue an unknown line of work (or, less likely, leisure) on the Pacific Coast.¹²³ John Holzwarth first began to settle his parcel in 1918, but he left for the first five months of 1919 “on account of nothing to do in

¹²¹ Hedrick case, *ibid.*

¹²² Mitchell case, *ibid.*

¹²³ A. W. Murdock affidavit, March 27, 1918, Wheeler Case, GLO Records.

winter.”¹²⁴ Edwin DeWitt faced similar troubles that same year: “I had to work every day This summer and fall in order to try to get some thing ahead to go on the place with.”¹²⁵ The ensuing summer of 1919 proved very dry in the Kawuneeche, leading Henry Bruce Wiswall to inform the land office: “I find it necessary to leave my homestead to seek employment in order to obtain food and other necessaries of life for myself, family and work stock because the drought conditions were of such a nature as to cause the native hay to be unfit for feed and garden crops to be to[o] scant for sufficient food.”¹²⁶

The last settler to prove up on a homestead claim in the Kawuneeche faced woes that were all too familiar to Isaac Jones and John Hedrick almost a half century earlier. Clarence Lee had entered his tract in 1927, but filed an extension in 1932, claiming that he was out of work “owing to business conditions existing in Colorado.” Lee, married with “two boys just coming of age, taken from a foundling institution,” eventually found a job as “a book binder by trade working in Denver four days a week, spending the rest of the time on his homestead.” The land office, sympathetic to Lee’s travails, eventually decided that: “Although the entryman has six or seven cabins on his homestead, which he rents in the summer time, he is sufficiently interested in and engaged in pastoral [sic] occupation to bring him within the scope of the statute if his commercial enterprise were urged as evidence of want of intent to make the land a home for himself and family.” The GLO concluded that the cattle Lee raised on the parcel provided sufficient evidence of cultivation, while the cabins the family had constructed to accommodate

¹²⁴ Cowgill testimony in Holzwarth case. For other cases of homesteaders earning wages elsewhere, see James Cairns testimony and Isaac Mayfield testimony, Oct. 5, 1897, Isaac Mayfield case, GLO Records.

¹²⁵ Edwin T. DeWitt to U. S. Land Office, Denver, Jan. 23, 1919, Edwin DeWitt case, *ibid.*

¹²⁶ Henry B. Wiswall affidavit, Dec. 3, 1919, Wiswall case, *ibid.*

tourists did not conflict with the letter of the homestead law, and in fact fulfilled the statute's spirit by helping the Lees "make the land a home."¹²⁷

As the Lees' case suggests, many settlers—not just those who filed homestead claims, but also those who purchased lands proved up by homesteading families—relied either on tourism to make the Kawuneeche a home. The emergence of Grand Lake as a minor but relatively prosperous summer resort benefited Kawuneeche settlers in two ways: the town provided a ready market for products made in or extracted from the Valley, and it channeled tourists into the Kawuneeche. Some settlers, particularly those whose homesteads lay near Grand Lake, earned much-needed cash by selling milk, lumber, and other goods to hotel and restaurant proprietors, as well as to owners or renters of summer cottages.¹²⁸ As interest in Grand Lake grew, the Kawuneeche became part of the town's excursion hinterland.

Robert "Squeaky Bob" Wheeler was evidently the first homesteader who realized the valley's possibilities for leisure travelers. Wheeler pitched a tent near the head of the Kawuneeche on a mid-June day in 1903, choosing a parcel that lay just outside the boundaries created in 1902 for the Medicine Bow Forest Reserve. Over the course of the next decade, he spent the second half of most calendar years on his homestead, and the other months working for wages. In the spring of 1913, he came back to his land and tried to make it his year-round home. He turned over half an acre of soil and began to garden—an uncertain undertaking since his land lay at an elevation of around 9,300 feet above sea level. Wheeler also began to clear the trees and underbrush off another portion of the tract, then planted it with exotic hay. Because of the cold summer nights, though, his improved meadow was slow to take root. Five years after

¹²⁷ Clarence Lee case, *ibid.*

¹²⁸ Carl and Ada Nelson, for instance, eventually had 35 milk cows, the milk from which supplied a Grand Lake grocery store and its customers, as well as the Grand Lake Lodge. Carl and Ada Nelson interview with Ferrel Atkins, Aug. 31, 1973, transcript in Atkins Papers, RMNP Archives, pp. 10-11.

clearing land for his hayfield, he explained to the land office that “On account of the high altitude it takes a long time to get land into meadow condition such as will enable one to cut and harvest a hay crop. My cultivated land has just reached the production stage.”¹²⁹

The General Land Office approved Wheeler’s request for an extension, angering U. S. Forest Service officials, who suspected Wheeler of abusing the Homestead Act. One USFS employee went so far as to forward a copy of a pamphlet Wheeler had produced to attract travelers to his property, by which he hoped to cast doubt upon Wheeler’s intentions: Congress had intended the Homestead Act, after all, to encourage agriculture, not tourism. Probably published some time 1909 and 1915, the pamphlet was illustrated with half-tone photographs of the Kawuneeche and Wheeler’s property, nicknamed the Hotel de Hardscrabble. Wheeler’s moniker perfectly encapsulated the peculiar ways in which industrious diversification on the part of some Kawuneeche settlers and the infusion of tourist dollars into the valley enabled some homesteaders to scratch out a living.¹³⁰

The pamphlet, which Wheeler probably wrote himself, extolled the wonders of the valley in terms very similar to those employed by mining-rush boosters of the 1880s. “The scenery is so wonderful,” Wheeler began, “that Enos Mills, the well-known writer, is seeking to have it included in the New Rocky Mountain National Park.” Wheeler highlighted his property’s excellent location, “at the foot of the Rabbit Ear Range, eight miles from Mt. Richthofen; four from Lulu Pass; four from Crater and Specimen Mts., which are on the trail into Estes park [sic].” Wheeler promised tourists that the Hotel de Hardscrabble constituted not only “the natural and *only* stopping place between Horse Shoe Inn, in Estes Park, and Grand Lake, or vice versa,” but also an idyllic wilderness paradise: “At the back of the Camp is a wonderful

¹²⁹ Robert Wheeler affidavit, June 13, 1918, in Wheeler case, GLO Records.

¹³⁰ “Camp Wheeler: The Different Resort on the Grand River, Colorado,” n.d., brochure enclosed in A.F. Potter to Commissioner, GLO, May 15, 1918, in Wheeler case.

waterfall. The beavers have two large dams in the stream near by. The wild flowers and wild strawberries are here in wonderful and untrampled profusion.” A stay at the Hotel de Hardscrabble would provide a feast for the palate and belly as well as for the eyes: “Here,” the hotelkeeper boasted, “one may actually eat wild strawberry shortcake, and trout just pulled from the stream. Fishing is good. It is far enough from civilization to insure good hunting.” And lest such amenities strike his readers as too tame, Wheeler concluded the text of his pamphlet by gesturing toward the untamed dangers that marked the status of his “Camp” as a wilderness retreat rather than a domesticated resort: “Mountain lion and wolves prowl about these mountains.”¹³¹

To the forester who forwarded the pamphlet to the General Land Office, the pamphlet’s significance was clear: “The improvements made,” concluded A. F. Potter, “point to the conclusion that the homestead has been developed hitherto chiefly from the standpoint of a public resort rather than as an agricultural farm.”¹³² Potter recommended that Wheeler’s the land office reject his final proof. GLO officials, though, dismissed this rationale and issued Wheeler a patent to his homestead, which later became the site of a full-fledged dude ranch known as the Phantom Valley Ranch.

Wheeler started his Hotel de Hardscrabble before Enos Mills conceived of his plan for a national park in the Estes Park area, as well as before the extension of modern roads to the Kawuneeche. Opportunities for homesteaders and other settlers to accommodate tourists remained scant prior to the mid-1910s, as Wheeler’s boast of the Hotel de Scrabble as “the natural and *only* stopping place” between the Estes Park area and Grand Lake suggested. The triumph of Mills’ coalition of tourist-oriented preservationists, as we will learn in the next

¹³¹ Ibid.

¹³² A. F. Potter to Commissioner of General Land Office, May 15, 1918, Wheeler Case, *ibid.*

section, would result in the establishment of Rocky Mountain National Park in 1915, as well as the completion of an automobile road between Grand Lake and Estes Park a few years thereafter. These developments combined to make the Kawuneeche easier to reach and more desirable to visit. These factors led, in turn, to two further consequences: First, a new breed of settler arrived who came to the valley not in hopes of becoming a self-sufficient yeoman harvesting a living from the land, but instead of finding a seasonal retreat while continuing to earn a livelihood in a distant town or city. Second, dude ranching became an increasingly large part of the Kawuneeche's economy.

Several of the men and women who appear in General Land Office records from the 1920s embodied the trend toward second-home development. We have already seen how Clarence Lee worked four days a week in Denver, then made the long trip up to the Kawuneeche for the weekends. Lee was unusual only in the frequency with which he made the journey from Denver to the valley. Military veteran Henry Nicholls appears to have held down a job at the Western Auto Supply Company in Denver in the early 1920s; he built a 24' by 34' "Log house" and plowed one acre "for garden truck," but otherwise made no improvements to his homestead claim adjoining the North Fork. Nicholls justified his failure even to raise hay by arguing that "it would not pay to put [his land] into cultivation especially the bottoms as it would wash away in the spring floods." The land office, which had generally required settlers in previous decades to satisfy the letter of the law, gave Nicholls a patent, even though he clearly intended neither to cultivate the land nor to reside year-round on the parcel.¹³³ Charles Clark proved more candid about his motivations, revealing to officials in 1926 that he wanted to purchase a parcel on Baker

¹³³ Henry L. Nicholls, "Application for Reduction of the Required Area of Cultivation," Nov. 18, 1922, Nicholls Case, *ibid.*

Creek through an isolated tract sale in order to use the land as a private fishing retreat.¹³⁴ John Hedrick, Isaac Jones, and others who homesteaded between the 1880s and the 1900s contended with extreme isolation; to get by, they often found themselves with little choice but to leave the valley for stints in order to sell their labor elsewhere. By the 1920s, by contrast, people like Nicholls and Clark took advantage of the new labor geography to which automobiles gave rise.¹³⁵ These newcomers, unlike the old-timers, earned their daily bread far away from the Kawuneeche, and they presumably envisioned the valley less as a workscape than as a leisure landscape.

Dude ranching, by contrast, comprised something of a hybrid between the ideals and realities familiar to old homesteaders, and the new markets for recreation that Rocky Mountain National Park and the Fall River Road fostered. Homesteaders rarely became dude ranchers by design; rather, they made a gradual, even unwitting transition, as the case of John Holzwarth and his family illustrates. As the family's homestead morphed into the Holzwarth Trout Lodge and, eventually, the Holzwarth Neversummer Ranch, the Holzwarths, their employees, and their guests developed appreciative but taxing relationships with the natural world. Digging deeper into the Holzwarth story offers insights into these relationships and their consequences for both the valley environment, and for later Park Service efforts to preserve and commemorate the role of settlers and dude ranchers in the Kawuneeche's history.

The rise of prohibition in Colorado drove the Holzwarths to homestead in the Kawuneeche; it also helped to lure them into the tourism business. The passage of Colorado's prohibition measure in 1916 forced John Holzwarth, Sr. (affectionately known as "Papa"), the

¹³⁴ Andrew Herod, *Labor Geographies: Workers and the Landscapes of Capitalism* (New York: Guilford Press, 2001).

¹³⁵ On the concept of worksapes, see Thomas G. Andrews, *Killing for Coal: America's Deadliest Labor War* (Cambridge, Mass.: Harvard University Press, 2008), ch. 4.

owner of Denver's Old Corner Tavern, to return to a line of work that had always appealed to him: ranching.¹³⁶ After emigrating from Germany in the 1880s, Holzwarth headed west. He tramped throughout the region working stints at various saloons and ranches and accumulating a bevy of tales that would keep his children spellbound in the years ahead. In time, Holzwarth became "an accomplished all-around horseman."¹³⁷ He tried to prove up a homestead claim on ranch land near Stillwater, south of Grand Lake and in an area now submerged by Lake Granby. Holzwarth "lived on this land 1 yr.," he claimed in his later filings with the General Land Office, building "a 2 room log house, log barn and . . . about ¼ mile of irrigation ditch." But in March, 1893, he had to abandon the claim "on account of illness and financial embarrassment."¹³⁸

Failure in the ranch business sent Holzwarth packing for Denver, where he found work with the Tivoli Brewing Company. Not long thereafter, he married a fellow German immigrant, Sophie Lebfromm. The couple eventually had five children, but only three of them survived childhood. The Holzwarths lived with uncommon thrift; by 1904, they had saved enough to purchase a saloon. Twelve years of alcohol-fueled prosperity ensued for the family, only to come to a crashing halt with the enactment of prohibition.

Papa had always relished his experience as a ranch hand and homesteader. His prior experience in Grand County made the Middle Park area the logical place for him to forge a return to the rugged land and rugged life he cherished.¹³⁹ Holzwarth entered upon a homestead claim in March of 1918, a year after purchasing 160 adjacent acres for \$2,000.¹⁴⁰ Sophie

¹³⁶ James D. Mote, *Holzwarth Homestead: Historic Structure Report and Historic Furnishing Study, Rocky Mountain National Park, Colorado* ([Denver?]: Department of the Interior, National Park Service, 1982) 3.

¹³⁷ *Ibid.*, p. 5.

¹³⁸ John G. Holzwarth, application for second entry, June 7, 1918, in Holzwarth case, GLO Records.

¹³⁹ Mote, *Holzwarth Homestead*.

¹⁴⁰ *Ibid.*, p. 14; Holzwarth case, GLO Records.

“Mama” Holzwarth and her two daughters lived and worked on the homestead only in the warm seasons, escaping the valley’s harsh winters for the more temperate climate of Denver. As for Papa, he found that building a ranch to raise horses and cattle and to grow hay proved more challenging than he expected. Holzwarth’s son, John Jr. (nicknamed Johnnie) later marveled: “we were too dumb and too stubborn to give it up.”¹⁴¹

After constructing a cabin from nearby stands of lodgepole pines (later known as the “Mama Cabin” after Sophie), Papa and Johnnie began clearing willow from the lowlands along the Colorado River. By 1920, their back-breaking work yielded 7 or 8 acres of cleared hay meadow.¹⁴² Then the family suffered a major setback. A team of draft horses toppled a wagon onto Papa, severely injuring his legs and hips and leaving him dependent on the use of a cane for the rest of his life. Though his body never properly healed from the accident, Papa “still tried to help with the work of building cabins or cutting and gathering hay.”¹⁴³ But such hard outdoor labor proved extremely difficult, so Papa spent more and more of his time on taxidermy. Holzwarth completed a correspondence course in the craft, which subsequently helped him contribute to the household’s income by preserving animals killed in and around the Kawuneeche for display or sale.¹⁴⁴ Johnnie, for his part, soon took care of most of the heavier work on the homestead; Papa soon placed most of the day-to-day management of the ranch in the hands of seventeenth-year-old Johnnie.¹⁴⁵

Johnnie struggled to diversify the family operation during the 1920s. Toward this end,

¹⁴¹ Quoted in “Conservationist Can ‘Take it With Him,’” *Denver Post*, March 17, 1974.

¹⁴² Morse Cargill testimony in Holzwarth case.

¹⁴³ Kathleen Means, comp., “The Holzwarth Family: Holzwarth Trout Lodge, Holzwarth Ranch, Neversummer Ranch, 1917-1974, RMNP,” May, 2001, typescript report from Fleshuts Cabin, Kawuneeche Valley, RMNP, 7.

¹⁴⁴ Ibid.

¹⁴⁵ Lynn Mohn, “Raising Pansies, Radishes, and Hell,” *National Parks and Conservation Magazine* 49 (June 1975), 11.

Johnnie operated what he called a “little woodpecker sawmill,” which produced roughly 300,000 board feet per year—more than enough to supply the ranch’s lumber needs while also providing an important source of extra earnings.¹⁴⁶ In winter, Johnnie laid over one-hundred miles of trap lines, extending as far as North Park. His take of beaver and marten brought in several hundred dollars each year; closer to the ranch, trapping ermine, mink, rabbits, and muskrats and selling the pelts to furriers offered another way to make money.¹⁴⁷ Johnnie also recalled that the homestead kept “probably the best milk cows in the valley, which we could sell or trade.” This small-scale dairy operation allowed the Holzwarths to make their own butter and cottage cheese, both staples at Mama’s table.¹⁴⁸

Lumbering, trapping, and dairying flourished, but Papa’s dream of establishing a successful ranch in the valley seemed to be growing increasingly unlikely. Disease claimed many of the family’s cattle, impressing upon the Holzwarths the instability of ranching in the Kawuneeche.¹⁴⁹ Only the unexpected arrival of tourism saved the Holzwarths from failure.

Johnnie Holzwarth recalled the inauspicious origins of his family’s involvement in the tourist trade in a series of retrospective interviews, many of them published by newspapers and magazines as the National Park Service negotiated to purchase his Never Summer Ranch in the 1960s and ‘70s. The details of the story shifted—Johnnie was an inveterate and creative

¹⁴⁶ “Living the Life of a Dude,” *Denver Post*, December 1, 1974.

¹⁴⁷ Means, comp. “Holzwarth Family,” 20.

¹⁴⁸ *Ibid.*, 21.

¹⁴⁹ “John Holzwarth: Mr. Dude Rancher,” *Denver Post*, Dec. 1, 1974. John M. Crowley’s interpretation of livestock raising would seem to conflict with the Holzwarths’ account of a disease outbreak. After extensive study on cattle ranching in the mountain parks of Colorado, the author claimed that “cool summers, severe winters, and persistently low air humidities” resulted in conditions that were “decidedly antiseptic and unfavorable to most diseases,” which results in “healthy and robust” livestock. John M. Crowley, “Ranching in the Mountain Parks of Colorado,” *Geographical Review* 65 (Oct. 1975), 448.

raconteur who once declared “you’re not a good dude rancher unless you can tell a story, and keep your guests entertained”—but the main contours remained fairly steady.¹⁵⁰

One Sunday afternoon in the summer of 1920, several of Papa’s pals motored up from Denver by car. After a day of illicitly tipping on Papa’s homemade whisky, the men became drunk and unruly. They fastened enthusiastically upon the thought of gorging themselves on a fresh-trout dinner. Alas, the men were too incapacitated to fish for themselves. An irritated Johnnie calculated that Papa’s friends would be more likely to go home if their hunger for trout had been sated, so he set out for the Colorado River with his fishing pole. Johnnie later estimated his subsequent catch at anywhere from 50 to 150 fish. Papa’s drunk friends feasted on the fish, after which Johnnie and Mama resolved that “all visitors henceforth would pay two dollars a day and eleven dollars a week for the trouble of room, board, horses, and diversions.”¹⁵¹ Not long thereafter, Holzwarth’s Trout Lodge officially opened, catering to any paying customer in search of rest, relaxation, and a rugged outdoor experience in the heart of the Colorado Rockies.

The Trout Lodge initially seemed like just another seasonal source of income. By the end of the 1920s, though, tourism had become the family’s primary business, enabling Mama to live on the ranch year-round. The Trout Lodge began by catering to anglers; it quickly grew thereafter into a dude ranch that sought to satisfy the broader desires of well-heeled Americans to experience a nostalgic frontier past in which they could pay to play the role of cowboy.

As historian Earl Pomeroy explained in his classic 1957 book, *In Search of the Golden West*, “it was not until the early 1920’s, when many a Westerner made on dudes what he lost on

¹⁵⁰ Quoted in Means, comp., “Holzwarth Family,” 27.

¹⁵¹ Mohn, “Raising Pansies, Radishes, and Hell!,” 11.

cattle, that the West generally awoke to realize that it had a new industry.”¹⁵² By 1922, the Holzwarths had begun to accommodate overflow visitors at the cabin built by homesteader Joseph Fleshuts two decades earlier. In 1924, the family built new guest cabins on the east side of the river, closer to Fall River Road, and thus more visible to the growing throngs of travelers touring Rocky Mountain National Park by automobile. And in 1929, the Holzwarths erected a large, three-story lodge while clearing additional land for pasture and mowing hay.¹⁵³ In the course of all this expansion, the operation outgrew its former name, and Holzwarth’s Trout Lodge became Holzwarth’s Neversummer Ranch.

Like most dude ranch operations, the Holzwarths offered the so-called American Plan, which included lodging, three meals a day of Mama’s home cooking, and a wide range of ranch-themed activities. Johnnie provisioned Mama’s larder with trout, deer, elk, grouse, and rabbit. The family also continued to raise vegetables, chickens, and dairy products, though now they sold these products not to tourists at Grand Lake, but to their own customers.¹⁵⁴ On the cusp of the Great Depression, the Holzwarths’ income from all their operations in the Kawuneeche totaled around \$3,000—hardly a large sum, but enough (together with infusions of cash from daughter Julia Holzwarth, who went on to work as an executive assistant for several large Denver manufacturing firms) for the operation to remain viable. In the years ahead, the Never Summer Ranch would grow into one of Colorado’s most reputable and beloved dude ranching

¹⁵² Earl Pomeroy, *In Search of the Golden West: The Tourist in Western America* (Lincoln: University of Nebraska Press, 1957), 168.

¹⁵³ Thomas B. Muths, “Holzwarth Ranch, Rocky Mountain National Park: Historic Structures Report, Architectural Section” (Jackson, Wyo.: AIA & Associates Restoration Architects & Planners, 1979), 4-5.

¹⁵⁴ Mote, “Holzwarth Homestead, Historic Structure Report,” 19-21.

destinations, thanks to a prime location just outside a National Park, and a broader desire among America's vacationing classes for authentic western experience.¹⁵⁵

By 1930, settlement had transformed much of the Kawuneeche Valley floor. A couple of dozen people had succeeded at making the valley into a year-round home. In their efforts to overcome the severe constraints of the valley environment, settlers and visitors alike initiated extensive ecological change, sometimes by intention but other times by accident. The resulting transformations seldom ended with the establishment of an equilibrium state. a new equilibrium state. Instead, change begot more change, forcing settlers to adapt to shifting circumstances they almost never comprehended or controlled.

At a minimum, homesteaders invariably had to plant crops to satisfy land office regulations. Settlers worked hard to turn wild lands into simplified agro-ecosystems designed to maximize the flow of solar energy and nutrients into the systems of the exotic cultigens that Americans and their livestock preferred to eat. In the process, settlers rapidly reconfigured environments that had evolved over many millennia. The clearing of willows, for instance, not only eliminated a favorite food source for beavers and a key habitat for many birds, insects, rodents, and amphibians; it also changed the hydrology of riparian areas. Because willow roots helped to hold the soils of the valley floor more or less in place, tearing willows up accelerated erosion.

Some of the crops that increasingly replaced willows, meanwhile, soon showed a propensity for transgressing the boundaries homesteaders had tried to maintain between gardens, pastures, and the surrounding wildlands. Livestock unwittingly carried in their hair or deposited around the Kawuneeche in their feces seeds of timothy and other grasses of African or Eurasian origin; strong winds also easily spread the seeds of the same grasses far afield. And though

¹⁵⁵ Mote, "Holzwarth Homestead, Historic Structure Report," 21.

records are mute on the topic, weeds such as thistle must have become more common, not only in the fields settlers plowed and planted, but also on the surrounding lands. Whether settlers labeled a plant a “crop” or a “weed” made little difference—both proved adept at out-competing the valleys’ native species, particularly in areas subject to cultivation or intensive grazing.¹⁵⁹ Homesteading, in short, initiated vegetative changes that are still visible to a trained eye in most parts of the Kawuneeche.

Just as introduced plants moved beyond their traditional ranges, the valley’s native fauna, ranging from insects to birds, rodents to ungulates, easily transgressed human property lines. Settlers almost certainly waged war on rodents, sometimes relying upon tomcats to do their handiwork; by the 1930s, some also presumably followed the increasingly common practice of poisoning mice, gophers, and other creatures that fed upon grain and hay intended for livestock.¹⁶⁰ Beavers posed even greater problems. Having re-inhabited the valley by 1900, they proved especially busy in the bottomlands homesteaders prized as hay meadows.

In addition to changing the Kawuneeche’s flora and waging war against certain components of its fauna, homesteaders introduced widespread hydrological changes to the valley. Settlers found the vagaries of water only slightly easier to manage than the vicissitudes of soil and climate. Ditches, though centered on the wetlands settlers sought to drain and the hayfields they sought to irrigate, caused changes that often extended well beyond their banks—and well into the future. When homesteader Sam Stone decided to convert the peatland environment of a Big Meadows fen into fields of timothy and clover, for instance, he dug a ditch roughly 500 meters long, half a meter wide, and a meter deep; in the process, Stone set in motion

¹⁵⁹ For a comparative case, see Mark Fiege, “The Weedy West: Mobile Nature, Boundaries, and Common Space in the Montana Landscape,” *Western Historical Quarterly* 36 (Spring, 2005), 22-47.

¹⁶⁰ For a recollection of efforts to kill gophers by poison, see Mary Birovchak Levkulich interview, in Jones-Eddy, *Homesteading Women*, 67. More broadly, see Donald Worster, *Nature’s Economy: A History of Ecological Ideas* (New York: Cambridge University Press, 1994), ch. 13.

a chain of events whose effects were still plainly evident in the late 1990s, more than eight decades after Stone stopped raising hay on the land. Peat fens require high water tables to maintain the anaerobic conditions necessary to conserve organic matter; they are thus “extremely sensitive” not only to variations in summer precipitation, but also to “the hydrologic changes created by even small ditches or water diversions.” Ecologist David Cooper and his colleagues explain that the Big Meadows ditch lowered ground-water levels by “intercept[ing] sheet flows in the central and southern portions of the fen.” In consequence, “the ditch effectively maintained Big Meadows in a state of severe and prolonged drought for much of the twentieth century.” While Cooper’s team found no evidence that peat began to decompose because of this artificial “drought,” the hydrological changes the drainage project set in motion produced clear and enduring shifts in soil composition and vegetative cover. Plants favoring mesic (moderately moist) sites such as bluejoint and tufted hairgrass (both valley natives) increasingly crowded out Northwest Territory sedge, water sedge, and other water-loving plants presumably thrived in the fen prior to Stone’s arrival.¹⁶¹ As settlers moved water from place to place, in short, they reconfigured habitats for plants and the other organisms who depended on them.

The ecological footprint of settlement extended well beyond the homesteads clustering along the North Fork. While mixed farming on the bottomlands constituted the backbone of the valley’s economy, settlers made extensive use of the surrounding lands. Mrs. Rob Harbison recalled that “It was a hard struggle on the ranch which they built from nothing.”¹⁶² Yet Harbison’s family did not create the ranch from their own labor alone. Instead, they enlisted energy and materials from various parts of the valley ecosystem. Settlers took wood for shelter,

¹⁶¹ David J. Cooper, Lee H MacDonald, Shaunda K. Wenger, Scott M. Woods, “Hydrologic Restoration of a Fen in Rocky Mountain National Park, Colorado, USA,” *Wetlands* 18 (September, 1998), 335-345. (quotes from 335, 335, 343)

¹⁶² Ferrel Atkins, summary of interview with Robert Harbison and Mrs. Robert Harbison, July 17, 1962, folder 20: “History, West Side,” box 1, Atkins Papers, RMNP Archives.

fencing, and fuel from forested portions of their homesteads, but they also took lumber from the public domain.¹⁶³ Many settlers also cut hay and grazed animals on federal lands. The livestock that provided homesteaders with milk, meat, and much else often spent at least some of their time feasting on government grass during the warmer months. Ferrel Atkins paraphrased Harbison as remarking that in the late 1890s, “the cattle grazed, ‘any damn place they wanted to.’”¹⁶⁴ The advent of federal conservation in the early 1900s resulted in greater government oversight over grazing. Henry Schnoor requested and received a permit in 1906 from the forest service that allowed him to graze ten head of cattle and two horses on the Medicine Bow Reserve.¹⁶⁵ In 1909, federal foresters authorized four families to graze 391 cows and 34 horses in the Kawuneeche area; the next year, these numbers stood at 500 and 30 respectively.¹⁶⁶ Though no one observed the ecological effects these particular animals had on the valley, one suspects that livestock eating government grass would have compacted soils, cut paths, fouled watercourses, distributed the seeds of invasive plant species, and chomped native plants that had

¹⁶³ A USFS investigator discovered in 1909 that “more or less cutting of poles, posts, etc., ha[d] been done on practically all the areas” of the Medicine Bow National Forest, though this presumably overstated the situation in the Kawuneeche, where cutting was probably restricted to the areas immediately adjacent to homesteads, parts of Bowen and Baker Gulches, and the woods above Grand Lake. C.M. Granger, “Report on Proposed Boundary Changes on the Arapaho National Forest, Colorado,” June 25, 1909, folder: “L-Boundaries 1908-09,” box 1: “Arapaho-Roosevelt National Forest, Alpha Files 1907-1973,” Arapaho-Roosevelt National Forest Papers, Records of the U.S. Forest Service, RG 95, NARA-Denver.

¹⁶⁴ Atkins summary of interview with Harbisons, 2. Johnny Holzwarth corroborated Harbison’s recollection on this count: “The Harbison’s cattle were all over the place, anywhere from where headquarters is now, into Grand Lake, down to Columbine, and almost up to Green Mountain Ranch. They’d run around the country all the time. They were always lost half the time.” John G. Holzwarth II interview by Roger and Susan Contor, Jan. 20, 1974, “Holzwarth Ranch: Homestead Historical Notes. Compiled 1974-1978,” RMNP Archives.

¹⁶⁵ Grazing Card, Henry Schnoor, April 15 to Oct. 15, 1906, box 75: “Special Use Permits and Directories, Maps, and Land Status 1906-1969,” Arapaho-Roosevelt National Forest Papers, RG 95, Records of the U.S. Forest Service, NARA-Denver.

¹⁶⁶ H. N. Wheeler, “Supplemental Report on That Portion of Proposed Estes National Park Lying west of the Continental Divide, Within the Arapahoe National Forest,” [May] 1910, folder 402: “Roosevelt – General,” box 587: “Historical Files, 1900,” Arapaho-Roosevelt National Forest Papers, RG 95, Records of the U.S. Forest Service, NARA-Denver.

little or no evolutionary experience with intensive grazing. Settlers drove livestock and rode horses onto public lands, but they also brought grass from federal land onto their homesteads to help sustain their stock through the hard mountain winters. After the Harbisons abandoned their claim to one 40-acre tract, for instance, they continued to cut it for hay “until someone else proved up on the claim.” Rob Harbison remarked that “with 40 cows to feed, they cut hay wherever they could find it.”¹⁶⁷ Last but hardly least, homesteaders like the Holzwarths and Bob Wheeler hunted, fished, and trapped on public lands. Although there is little evidence that they did so to excess, they nonetheless shifted ecological relationships involving deer, trout, marten, and the other animals they killed.¹⁶⁸

The Homestead Act, as part and parcel of a broader complex of cultural and economic injunctions to tame and domesticate western lands, required settlers to alter the natural ecology of the Kawuneeche—and alter it they did. The new agricultural order seemed most evident in hay meadows and vegetable gardens, but its impacts stretched outward in space, from the homestead heartland of the valley bottom into the mountains above, and forward in time to the present day. Significant as these transformations might appear from our retrospective vantage point, though, they probably struck many settlers as incomplete and precarious. Homesteaders recognized all too well that their power over the valley’s environments remained sharply constrained. Ironically, the limited nature of the environmental changes homesteading wrought in the Kawuneeche made it possible for settlers in the valley to attract visitors who sought refuge from the urban-industrial ills of twentieth-century America while enjoying many of the comforts of home. The relatively subtle, diffuse, and reversible nature of the valley’s settlement landscape

¹⁶⁷ Atkins summary of interview with Harbisons, 4.

¹⁶⁸ On fur-trapping, see material on Holzwarth earlier in chapter, as well as Hedrick journal.

would also make it easier for the National Park Service to portray Kawuneeche homesteads as sufficiently “natural” to warrant their annexation to Rocky Mountain National Park.

The Holzwarths and everyone else who succeeded at carving homesteads out of the valley invariably depended on some combination of backbreaking work, skill at turning the area’s natural and human systems to the maximum advantage, successful social networking, and good fortune. Even as their “li[ves] continued mountain-walled,” the Kawuneeche’s inhabitants found their lives and livelihoods tied ever more tightly to the world outside.¹⁶⁹ By pursuing a wide range of subsistence and market activities—hunting, trapping, fishing, herding, lumbering, clearing, irrigating, draining, planting, gardening, catering to tourists, leaving their lands to embark on labor migrations, and so forth—the men, women, and children who settled the Kawuneeche resolved to turn the Valley’s unruly natural systems and Colorado’s chaotic markets to their personal advantage.¹⁷⁰ A few of those who succeeded in this intricate balancing act became the most permanent inhabitants the valley has ever known—for unlike the Nuche, settlers like Johnnie Holzwarth made the Kawuneeche their year-round home. The Park Service, once it bought up virtually every parcel of private property in the valley, might have devised a way to celebrate the resourcefulness of the Kawuneeche’s settlers; instead, the agency pursued a less coherent and more problematic policy in which it transformed some parcels into service areas, restored others in an attempt to recreate a pre-settlement landscape the NPS defined as “natural,” and turned the Holzwarth place into a “living history” museum intended to celebrate the achievements of early homesteaders while largely denying the pivotal role national-park

¹⁶⁹ Black, *Island in the Rockies*, 238.

¹⁷⁰ Mrs. Rob Harbison recalled that her family earned its income “from wrangling, wood sales, tourists, cutting ice [Rob was the Grand Lake iceman], and a dairy which they started in 1898.” Atkins summary of interview with Harbisons, 4-5.

tourism played in a settlement history indelibly shaped by the federal government's efforts to conserve the valley's forests and waters and preserve its scenery and wildlife.

Conservation Comes to the Valley

In 1902, federal officials from the Department of the Interior's forestry branch temporarily withdrew more than 400,000 acres in Wyoming and Colorado from settlement and established on these lands the Medicine Bow Forest Reserve. Three years later, on May 17, 1905, Theodore Roosevelt signed into law an executive order that enlarged the reserve and made it permanent.¹⁷¹ With the stroke of Roosevelt's pen, most of the North Fork watershed was closed to homesteading and most other forms of transfer into private ownership. Federal officials intentionally excluded the Kawuneeche's bottomlands from the forest reserve. This was partly a reflection of vegetation; the bottomlands comprised more willow and meadow than forest. But the government also understood that any action that threatened to meddle with vested property rights or withdraw lands believed to be suitable for agricultural settlement would only serve to strengthen local resistance to the conservation campaign that served as a keystone of Roosevelt's administration. A blunt letter Roosevelt received from a sawmill owner on the east slope of the Medicine Bow captured the main outlines of anti-conservation sentiment in Colorado: "If you wonder why I oppose the Reserve, it is because I love liberty, hate red tape, and believe in progress."¹⁷²

The establishment of Rocky Mountain National Park in 1915 sealed the federal government's role as the valley's largest landowner and most influential land manager. Yet the

¹⁷¹ This chronology is developed from a range of sources cited elsewhere in this report, particularly J.W. Morrill, "Birth of the Roosevelt National Forest," [March 1, 1943], folder 72A, box 13, "Historical Files, 1900," Arapaho-Roosevelt National Forest Papers, RG 95, NARA-Denver.

¹⁷² Letter quoted in Buchholtz, *Rocky Mountain National Park*, 127. For more on context, see McCarthy, *Hour of Trial*.

USFS and NPS rarely succeeded at presenting a united front. The rival agencies possessed different ideologies and competing visions. The Forest Service embodied the utilitarian thinking of its founder, the well-heeled forester Gifford Pinchot, while the national parks (administered haphazardly until Congress created the National Park Service in 1916) emphasized aesthetic preservation and tourism. Conflicts began to flare between foresters and park advocates even before Rocky's creation in 1915 and the organization of the NPS in 1916, yet the USFS and the NPS also collaborated effectively on the local level.

In addition to the extension of the Grand Ditch across the sides of the Never Summers and the penetration of the Kawuneeche Valley floor by homesteaders, the early twentieth century thus witnessed a third development of pressing significance and enduring importance to the valley's environmental history: the incorporation of parts the valley into the National Forest and National Park systems. With irrigationists and homesteaders, tourists and federal land managers all vying to carve out niches in the valley, the Kawuneeche became something of a microcosm of the broader struggle for control of the landscapes and resources of the American West during the early decades of the twentieth century.

On many occasions, the ditch company, settlers, and federal officials managed to cooperate. Ironically, though, it would be the National Park Service, the entity whose mission ostensibly reflected a commitment to preserving the *status quo*, that sought most strenuously—and with the most success—to simplify management of the Kawuneeche by consolidating ownership over the valley. With the Never Summer boundary expansion of 1930, the Park Service was well on its way to controlling most of the Kawuneeche. Escaping the legacies of the valley's complex histories, though, would prove more difficult than establishing legal control over the Kawuneeche.

Federal foresters came to the Kawuneeche for much the same motivation that had led the Water Supply and Storage Company to the valley: Conservationists understood that in the arid West, the future depended on water. Whoever controlled this vital resource held the region's future in their grasp. If water was wasted instead of developed, then the West would wither and perhaps even die. If such a decline or collapse transpired, the failure of the region in which Americans had long invested so many of their hopes and dreams might even drag the rest of the nation down with it. In this manner, federal conservation became imbued with a fervently nationalist mission.¹⁷³

The Kawuneeche's snowbanks and streams, not its forests or scenery, thus provided the initial motivation for the federal government to reserve in perpetuity large portions of the valley under public ownership. To be sure, the men who created the Medicine Bow Forest Reserve lamented the destruction of forests by fire and logging, as well as the unregulated slaughter of deer, elk, and other desirable game species. They virtually always made their case for forest conservation, however, not by invoking aesthetics or incipient ecological understandings ("ecology" was a new and technical term at the time, and only gained wider currency after the 1930s), but instead by highlighting the hydrological functions forests served.

"The area covered by the forest," claimed Smith Riley and J. H. Hatton in a 1904 Bureau of Forestry report, "The Proposed Medicine Bow Forest Reserve," "may be considered a great sponge, so perfectly is the office of absorption exemplified, . . . while denuded areas present little

¹⁷³ Samuel P. Hays, *Conservation and the Gospel of Efficiency: The Progressive Conservation Movement, 1890-1920* (Cambridge, Mass.: Harvard University Press, 1959); Thomas R. Wellock, *Preserving the Nation: The Conservation and Environmental Movements* (Wheeling, Ill.: Harlan-Davidson, 2007).

humus and a marked tendency to rapid thaws and surface run-off.”¹⁷⁴ By protecting mature forests, Riley, Hatton, and other conservationists argued, the government could safeguard the winter snow pack on which farmers of irrigated lands on the Colorado piedmont, homesteaders in the mountain valleys, and even residents of distant cities such as Fort Collins and Cheyenne depended. The branches and needles of living trees kept the sun from prematurely melting the winter’s bounty of water; tree roots, meanwhile, held potentially unstable mountain soils in place, simultaneously preventing erosion and maintaining a beneficial hydrological regime. Trees killed by logging or fire could no longer perform these critical hydrological services. Because the transformation of public domain into private lands had historically resulted in the destruction of American forests, conservationists sought to keep the forests of the dry and vulnerable West under government ownership and control.

Rather than invoking beavers, boreal toads, pine stands, willow thickets, or other potential beneficiaries of the Medicine Bow reservation, conservationists instead emphasized the dependence of man-made reservoirs and irrigation ditches on standing forests. Maintaining the forest “sponge,” foresters argued, was crucial to the long-term success of irrigated agriculture in Colorado.¹⁷⁵ “The rainfall on the adjacent eastward plains,” Riley and Hatton explained, “is

¹⁷⁴ Smith Riley, and J. H. Hatton, “The Proposed Medicine Bow Forest Reserve, Colorado,” 1904, folder 327: “Boundaries – Roosevelt,” box 75: “Historical Files, 1900 Arapaho-Roosevelt National Forest Papers, RG 95, NARA-Denver..

¹⁷⁵ Elwood Mead had made a similar argument back in 1888, when he claimed in an address before a gathering of Colorado farmers: “Of the matters that demand our immediate attention, I can only indicate a few, the first of which is the conservation of our water supply by more effectively retaining the snow on the mountains. ... We need to stop mountain fires, the mountain sawmill and the railroad tie cutter. Every acre of forest shorn from the high mountain ranges means a loss of more water for late irrigation than an acre reservoir in the valley will impound. Let the construction of reservoirs wait; what we want first is the preservation of the natural ones. If we can keep the sides of our mountains covered with timber we won’t need a mountain reservoir for the next decade. But let the sun’s rays fall directly on their bare and blasting sides and all the reservoirs in Christendom would fail to give us a satisfactory water supply.” Alvin T. Steinel, *History of Agriculture in Colorado: A Chronological Record of Progress in the Development of General Farming, Livestock Production and Agricultural Education and*

insufficient for agriculture, even for early-maturing crops; and since the development of the potato and sugar beet industries, excessive demands are made upon all water resources. Extensive reservoir systems have been constructed,” they remarked in a clear reference to projects such as the WSSC’s storage system, “to catch the surplus spring flow and hold it until needed in late July, August, and September.”¹⁷⁶ Deforestation, foresters worried, would greatly accelerate spring run-off. This, in turn, would tax reservoir systems, lower crop yields, and unleash flooding that would damage or destroy capital-intensive irrigation systems, carry off top soil, and possibly even jeopardize the lives of those downstream.

If watershed protection constituted the main rationale for creating the Medicine Bow and other forest reserves, however, the Forest Service (created in 1905 and placed under Gifford Pinchot’s command in the Department of Agriculture) soon began to implement a much more expansive management agenda. Unfortunately, little evidence remains to document the activities of forest rangers in the Kawuneeche, partly because the valley occupied an extreme periphery of a reserve initially administered from Estes Park, then from Fort Collins, and that passed through several changes in name and management (parts of the Kawuneeche lay within the Medicine Bow Forest Reserve from 1902 to 1905, the Medicine Bow National Forest from 1907 to 1910, Colorado National Forest from 1910 to 1932, and Roosevelt National Forest thereafter).¹⁷⁷ —in the form of—It seems safe to assume, however, that rangers did sometimes police the reserve. Maintaining the forest “sponge,” after all, required the USFS to suppress fire and eliminate

Investigation, on the Western Border of the Great Plains and in the Mountains of Colorado, 1858 to 1926 (Fort Collins: State Agricultural College for the State Board of Agriculture, 1926), 210-11.

¹⁷⁶ Riley and Hatton, “The Proposed Medicine Bow Forest Reserve, Colorado.” A later USFS report made precisely the same connection: “New reservoirs and ditches are constantly being constructed to make use of the water from the streams heading in the Arapaho National Forest, and the value of any protection which it is possible to afford the stream-flow can not be overestimated.” Granger, “Report on Proposed Boundary Changes.”

¹⁷⁷ Buchholz, *Rocky Mountain National Park*, 28-29.

unregulated logging; protecting desirable game species and vegetation probably led rangers to add poachers and herdsmen not possessing the requisite grazing permits to a list of undesirable scofflaws headed by arsonists and timber thieves. While this so-called “protection” work probably succeeded at preventing many forms of ecological harm, Forest Service management also played a role in causing or fostering some of the most pressing ecological problems in the present-day Kawuneeche, particularly the near-eradication of the keystone predators that played crucial ecological functions in many valley ecosystems and excessively high ungulate populations, particularly after the USFS partnered with other organizations to reintroduce elk and moose in the mid-1910s and 1970s, respectively.

Just as environmental and political developments beyond the Kawuneeche led to the inclusion of much of the valley’s slopes in federal forest reserves, so, too, would the rise of aesthetic preservation, wildlife protection, and nature tourism combine to bring first the eastern stretches of the valley, and eventually most of the remainder of the Kawuneeche, into Rocky Mountain National Park. The idea for a national park in the northern Colorado Rockies seems to have originated with Enos Mills, a guide, naturalist, lecturer, author, and innkeeper of the Long’s Peak House. Mills had crossed paths with the great preservationist, John Muir, on a California beach back in 1889. The two men undoubtedly had much to talk about; both were acute observers of the natural world, and both felt drawn to forsake the cities and towns of the industrializing United States to take in the wilderness splendor of the high western mountains. Mills was less idealistic and more pragmatic than Muir, but he shared Muir’s disappointment with Pinchot’s program of federal forestry. “A Forest Reserve,” Mills complained, “is

established chiefly for the purpose of using it to produce trees for the saw-mill and grass for the cattle.”¹⁷⁸

Convinced that the Medicine Bow forest reserve, for all of the fervent opposition it had initially engendered from conservation’s opponents, had actually turned into a sweetheart deal for lumbermen and stockmen, Mills hatched an idea in 1909 for a federal game refuge in the Estes Park area. From this inspiration, Rocky Mountain National Park would eventually take concrete form on the Colorado landscape. Influential residents of Estes Park such as the automobile tycoon and hotelier, Freeman Stanley hastened to lend the support of the Estes Park Protective Association to Mills’ proposed reserve. Mills wanted to protect and enhance the flagging wildlife populations of the Estes Park area; he recognized, though, that wild animals fared best when their wild habitats received protection from settlement and extractive industries. Initially, the impulse to preserve scenic, sublime wonders such as those about which correspondents from the Kawuneeche Valley had waxed eloquent back in the 1880s was of secondary significance. As Mills endeavored to build a coalition of supporters, though, aesthetic and spiritual motivations joined game and habitat preservation among the core arguments advanced by park advocates.

The proposal for a national park in the Colorado Rockies, like the Yellowstone proposition in 1872 and like most national park bids thereafter, received enthusiastic support not only from a small but dedicated cadre of local and national preservationists, but also from powerful segments of the business community.¹⁷⁹ Railroad companies, hotel and restaurant

¹⁷⁸ Quoted in *ibid.*, 132. On Mills, see Alexander Drummond, *Enos Mills: Citizen of Nature* (Niwot: University Press of Colorado, 1995); on Muir, see Donald Worster, *A Passion for Nature: The Life of John Muir* (New York: Oxford University Press, 2008).

¹⁷⁹ Alfred Runte, *Trains of Discovery: Railroads and the Legacy of Our National Parks* (Lanham, Md.: Roberts Rinehart, 2011); Theodore Steinberg, *Down to Earth: Nature’s Role in American History* 2nd ed. (New York: Oxford University Press, 2009), 146-8.

owners, automobile liveries, realtors, newspaper editors, and other boosters all hoped to profit from the tourist stimulus a national park would generate in Denver, Boulder, and other Front Range towns. Thanks to the forceful efforts of J. Horace McFarland, head of the American Civic Association, James Grafton Rogers, a Denver lawyer who helped to found the Colorado Mountain Club in 1912, Colorado Representative Edward Taylor, and others, Mills's park plan gathered momentum.¹⁸⁰

An inevitable and thorny question soon arose: If Congress were to create a national park, where should its boundaries run? Federal investigations ensued, followed by several years of political wrangling. Much was at stake in these debates. They would determine which watersheds and peaks, which breeding grounds and scenic mountain lakes, which mining claims and water diversion sites and homesteads would lay within a national park and which would not. Just as importantly, though, the very meaning of the national parks still lay very much open to question.

To this point, Congress had established just nine national parks, which did not yet comprise a system in any sense of the word. Administration under the Department of the Interior and, in some cases, the U.S. Army, remained haphazard and chaotic. Rules and customs varied considerably from park to park. Moreover, one of the nation's crown jewels, Yosemite, was under siege. San Francisco's civic leaders pushed in the wake of the horrific 1906 earthquake and fire to build a dam that would flood the park's Hetch-Hetchy Valley, prompting John Muir and his preservationist allies to conduct an impassioned defense of Yosemite in particular, and national parks in general, as sacred and inviolable treasures.¹⁸¹ Given this context, it is no

¹⁸⁰ Buchholz, *Rocky Mountain National Park*, 120-137; Enos Mills, *Story of Estes Park* (Longs Peak and Estes Park, Colo.: The Author, 1911), 102.

¹⁸¹ Alfred Runte, *National Parks: The American Experience*, 4th ed. (Lanham, Md.: Taylor Trade Publishing, 2010), ch. 4; Robert W. Righter, *The Battle over Hetch-Hetchy: America's Most*

surprise that the debate over the boundaries for the proposed national park in the Rocky Mountains boundaries inevitably came to involve competing visions of what the establishment of such a preserve would mean for the region's people, landscapes, and ecosystems.

Since no National Park Service yet existed, it fell to other federal agencies to respond to the political pressure Mills and other park advocates were bringing to bear. The Forest Service launched one set of investigations. Medicine Bow Forest Chief H. N. Wheeler expressed hostility to the proposal. Most of the lands park supporters wanted Congress to protect, after all, lay within the reserve Wheeler managed; the chief's response anticipated the bitter rivalry that would develop between the USFS and the national parks in ensuing decades.¹⁸²

Opposition to the park, though, was hardly universal among Forest Service personnel. In 1910, federal forester Smith Riley filed a report on what boosters were then calling "The Proposed Estes National Park." Riley voiced support for the proposal in principle, though in practice, he found Mills' proposal too grandiose. The naturalist had envisioned a park stretching from Mt. Evans, west of Denver, all the way to the Wyoming border, but such an expansive park lacked support among both Colorado citizens, and most federal officials. Riley therefore made his support for an Estes National Park conditional on a reduction in the preserve's size from around 1000 square miles to approximately 370 square miles.¹⁸³

Riley went on to recommend that the redrawing of the reduced park's boundaries so that they included the entire Grand Lake and North Fork areas, west to the crest of the Never Summers. The forester justified such a boundary as a way to maximize the efficiency with

Controversial Dam and the Birth of Modern Environmentalism (New York: Oxford University Press, 2006).

¹⁸² Buchholz, *Rocky Mountain National Park*, 135.

¹⁸³ Smith Riley, "Report on Area Included Within the Proposed Estes National Park," [March, 1910], folder 424: "RMNP, 1910-1917," box. 90, "Historical Files, 1900," Records of Arapaho-Roosevelt National Forest, RG 95, Records of the U.S. Forest Service, NARA-Denver.

which the new park could be policed and administered; by aligning the park's borders according to what Riley called "natural topographical compartments, . . . the boundary of the Park would be more widely known, more easily established, and the likelihood of trespass greatly lessened." Riley, anticipating opposition to his boundary proposal from timber and mining companies, argued that while Mills' mega-park encompassed valuable mining, grazing, and water supply hinterlands, "the creation of a National Park in this vicinity"—meaning in the Estes Park and Grand Lake regions—would do little to "interfer[e] with existing industries." Better still, establishing such a preserve "would greatly increase the interest of tourists in this locality, would bring a larger number of visitors during each season, and would greatly benefit the tourist industry and the revenue derived from this source by the permanent inhabitants."¹⁸⁴ In Riley's thinking, preservation would beget tourism—and tourism would beget stability and prosperity for the residents of an economically marginal area.

Whether this hopeful scenario would actually take shape, however, depended on what specific rules and regulations Congress established in the enabling act needed to establish a national park. Riley's enthusiasm, and presumably that of many of his contemporaries, was thus contingent upon a second factor: permissive regulations that would enable those who already resided in or used the North Fork Valley to continue exploiting the public domain in essentially the same manner as they had in the past. "The creation of a National Park," Riley reasoned with unarguable logic, "would not materially affect the stock raising industry on the west side of the Continental Divide, if cattle and horse grazing were allowed on the present scale to nearby owners of stock." Perhaps surprisingly, Riley actually went further than either Teddy Roosevelt or Enos Mills in one important regard: While the president had taken pains to exclude the bottomlands of the North Fork from the Medicine Bow Forest Reserve, and Mills had done the

¹⁸⁴ Ibid.

same in his initial proposal for an Estes National Park, Riley saw no need to allow future homesteaders to settle on the floor of the Kawuneeche Valley. Riley dismissed the existing farms and ranches of the valley as of “minor importance” because their operations were “confined to raising hay in connection with stock raising.” Riley understood that local residents were “opposed to any provision . . . which will interfere with agricultural settlement.” Hee also felt confident, though, that “the greater part of the bottom land fit for agriculture ha[d] already been taken up, and the creation of the proposed Park would not greatly affect agriculture, as only the poorer classes of land remain.”¹⁸⁵ Though Riley was largely right about the low quality of those parcels still remaining open to homesteading, the forester grossly underestimated the continuing willingness of prospective settlers to take their chances on the Kawuneeche: nearly half of the homestead claims ever filed on the Kawuneeche were made *after* Riley’s 1910 report.¹⁸⁶

A month earlier, in February, 1910, Riley had attended a public meeting in Grand Lake regarding the park proposal. There he learned that the name Mills’ supporters had attached to the plan—Estes National Park—gave unnecessary offense to folks who lived across the Continental Divide from Estes Park. Someone suggested “Colorado National Park” as an alternative, an idea Riley embraced. As for the administration of the proposed park, Riley preferred that it remain under USFS control, thus attaching a third crucial condition to his support for the plan.

As a fourth and final condition of support for the proposed national park, Riley circled back to Mills’ initial vision of the park as a game preserve. The forester argued that “the objects of those desiring the creation of the proposed National Park” could readily “be secured without

¹⁸⁵ Ibid.

¹⁸⁶ See appendix 2.

injury to present industries, by creating the Park more along the lines of a Game Preserve.”

Riley foresaw a central role in the administration of such a park for the Colorado Game and Fish Commission, which he perceived as the only agency capable of insuring that wardens would be “on duty at all times on the proposed reserve, devoting their entire time and energy to the protection and propagation of game.” Riley supported a continuation of grazing, mining, and limited logging, all under special use permits, as long as these activities did not interfere with game populations. Riley imagined that a game preserve along these lines would emphasize not only the protection of desirable species, but also their propagation. He advocated, for instance, that the park administration would readily issue a permit to anyone who wanted to trap or hunt predatory animals, “with the exception of bear.” In addition to exempting bears from predator eradication, Riley supported one other reform to existing USFS policy: like John Muir, who detested sheep as “hoofed locusts,” Riley thought the animals should be banned from the national park.¹⁸⁷ Riley concluded his report with good news for park supporters: at the Grand Lake meeting, “representative property owners of the community” expressed “unanimous” support for “the establishment of such a Park, provided it would not exclude miners and agricultural settlers, grazing and the conservative use of timber.”¹⁸⁸

Clearly, what advocates would later lionize as “*the* national park idea” was still very much under development and open to debate.¹⁸⁹ Neither Riley nor the residents of Grand Lake seem to have understood Enos Mills’s core motivation in lobbying Congress to create a new national park in an area that was already largely under USFS administration. National forests

¹⁸⁷ Ibid.

¹⁸⁸ Ibid.

¹⁸⁹ Riley’s report illustrates the wide range of ideas and policies considered appropriate for national parks prior to the consolidation of NPS policy in the late 1910s and 1920s. See Richard Sellars, *Preserving Nature in the National Parks: A History* (New Haven, Ct.: Yale University Press, 1997), chs. 1 and 2.

sought to fulfill Gifford Pinchot's utilitarian mission of advancing "the greatest good for the greatest number for the longest time" through the managed use of public lands. Mills and his most ardent allies, by contrast, envisioned something different—a national park in which wild nature could endure and flourish in all its glory, with regulations banning the hunting of game species, grazing, logging, mining, and farming.¹⁹⁰

The United States Geological Survey joined the park fray in 1912, dispatching Robert B. Marshall that September to examine "the Area of the Proposed Rocky Mountain (Estes) National Park, Colorado." Marshall, like Riley, portrayed the valley's homesteads as marginal affairs. "Much of the land in the portion of the Grand Valley included the park recommended is in private ownership," he noted. Curiously, though, Marshall encountered few settlers occupying their holdings. He claimed that most of the tracts he inspected "appear to have been used only during the short summer season as pasture lands. They have not been used as homes for some time." He granted that "Undoubtedly attempts have been made to establish homes here, but it is my opinion that the long cold winters, with heavy snowfall, will always make these lands of little value except for pasturing purposes during the summer." Though the Kawuneeche struck Marshall as a singularly poor country for agriculture, he hastened to add that the area might serve one important function: "The Valley is . . . an ideal camping ground and I am convinced that with establishment of a national park it will derive far greater revenue for summer tourists than it could ever receive otherwise."¹⁹¹ Like Riley, Marshall confidently predicted that the

¹⁹⁰ As mentioned before, Mills disliked forest reserves because they were "not established for . . . beauty but for practical use." Mills also complained that the USFS "deals almost entirely with the business world and is as plainly and severely a business proposition as is the growing of wheat and potatoes or the raising of hogs." Quoted in Buchholtz, *Rocky Mountain National Park*, 133-135. In this regard, RMNP supporters may have been ahead of the curve. Sellars has found that the NPS during its early years largely parroted Pinchot's catchphrase; *Preserving Nature in the National Parks*, 58.

¹⁹¹ R. B. Marshall, "Report on an Examination of the Area of the Proposed Rocky Mountain (Estes) National Park, Colorado," Jan. 9, 1913, folder: "Local History," Box 13, "RMNP

incorporation of the Kawuneeche into the park proposal would boost tourism to the valley, which both officials agreed seemed to represent the highest feasible use of this high mountain expanse.

Citizens and officials outside of Grand Lake and the North Fork Valley, though, were growing increasingly uncomfortable with the notion of a national park on their doorstep. The mild support Smith Riley had witnessed at the 1910 meeting in Grand Lake had deteriorated by the time the board of county commissioners convened a large citizens' meeting in January, 1911. Together, the board and citizens approved a strongly-worded resolution "most earnestly protest[ing] against any portion whatever of Grand County Territory being taken over by the United States National Government to be named or known as Estes National Park or any other National Park."¹⁹²

The resolution drafted by park opponents enumerated a litany of grievances. They began by expressing their concerns over the economic and fiscal impact of park designation: "It is well known to all informed persons," they bemoaned, "that Grand County is probably as undeveloped as any County in the state of Colorado; and we are in debt to the extent of over \$100,000." The county's "only means . . . to pay off its now outstanding debt . . . is by the development of its resources." Grand County, park opponents, complained, was "as yet in its infancy." The proposed park would not only derail the progress of a region still "capable of great agricultural development," but it would also forbid the development of several mines where there were "known to be large bodies of low grade ore which only need transportation facilities to become paying properties." All evidence to the contrary, Grand County residents still believed that "this territory that is liable at any time to become one of the greatest Mining Districts yet known; and

Correspondence, 1927-1953," Records of Rocky Mountain National Park, RG 79, Records of the National Park Service, NARA-Denver.

¹⁹² Minutes, Jan. 3, 1911, *Proceedings of Grand County Board of County Commissioners*, book 2.

for this reason we seriously object to its being taken into a National Park.” Keeping potentially productive lands under permanent federal ownership struck Grand County’s commissioners and citizens as particularly objectionable because “practically eighty per cent of the entire area of Grand County [wa]s already withdrawn from entry.” The reservation of public lands through forest reserves and other means left the county still “compelled to maintain the Government of this territory” without any “hope ... [of] receiv[ing] any revenue” from property taxes on public lands, “as would have been the case had this land been left open to settlement; and we most earnestly protest against the taking of still more of our territory.” Grand County’s final objection to the park was more procedural than substantive: county officials had “ha[d] never been informed of the proposed boundaries of this Park nor ha[d] they been consulted in regard to the same in any manner whatsoever,” they groused, “and it looks as though an attempt had been made to conceal the the [sic] facts in the case until the same could be railroaded through. Had the Citizens of Grand County been consulted,” the commissioners and citizens assured that “their voices would have been heard protesting long ago.”¹⁹³

The Grand County resolution portended political trouble for Enos Mills and his supporters. And indeed, congressional committees, swayed by irrigation, lumber, grazing, and mining lobbies, as well as by local opposition to the proposed park, killed one park bill, then another. Mills had proposed a preserve encompassing more than one thousand square miles; Marshall, for his part, had suggested a more modest park of seven hundred square miles.¹⁹⁴ Clearly, though, such expansive borders were bound to doom any future effort at establishing a park. Supporters thus eventually consented to a reduced park of 358.5 square miles whose borders loosely resembled those Riley had advocated in his 1910 report. They also accepted a

¹⁹³ Ibid.

¹⁹⁴ Buchholtz, *Rocky Mountain National Park*, 135-136.

number of provisions to protect the interests of those who owned or used the lands contained within the new boundaries, though these fell far short of the permissive rules Riley had championed. Together, these compromises on boundaries, rights, and uses successfully blunted opposition from extractive industries, their political allies, and residents of the counties affected by the proposal. At last, in January, 1915, bipartisan support from Colorado's congressional delegation, led by Representative Edward Taylor in the House and Senator Charles Thomas in the Senate, again brought a bill to establish Rocky Mountain National Park before Congress.¹⁹⁵

In the park bill's final committee hearing, Taylor and Thomas lined up a who's-who of Colorado politicians to stump in support of the measure. The state was already planning a road across the Continental Divide from Estes Park to Grand Lake, outgoing Governor Elias Ammons promised. Some 56,000 tourists had visited the proposed park area in the previous summer season, governor-elect George Carlson claimed. The park, asserted Representative Taylor, lay just four hours by automobile from Denver. By passing the park bill, Senator John Shafroth remarked, Congress could help domestic tourists to "see America first." Park boosters, however, were not content to let words do all the talking; after a "stirring plea" from Enos Mills, they showed a series of "colored stereopticon pictures" that enabled committee members to envision the high-mountain landscapes Mills and his allies were seeking to protect and publicize.¹⁹⁶ The desire of a broad coalition of park supporters to prevent commercial development in the hopes of encouraging tourism, testimony before the Public Lands Committee made abundantly clear, constituted Rocky Mountain National Park's founding mission.

Congress evidently found this rationale persuasive: on January 18, 1915, it passed the

¹⁹⁵ Ibid., 136.

¹⁹⁶ Ibid., 136; Lloyd K. Musselman, *Rocky Mountain National Park: Administrative History, 1915-1965* (Washington D.C.: U.S. Office of History and Historic Architecture, Eastern Service Center, 1971), ch. 2.

park bill. The *Rocky Mountain News* celebrated the park campaign's success by calling the bill's "passage ... the crowning result of one of the best organized and most efficiently managed campaigns ever conducted by Colorado people to obtain any benefit for the state."¹⁹⁷ In the law creating the Park, Congress charged RMNP's administration with providing for "the freest use of the said park for recreation purposes by the public and for the preservation of the natural conditions and scenic beauties thereof."¹⁹⁸ This expansive mandate cast tourism, aesthetic enjoyment, and the preservation of amorphously defined "natural conditions" as compatible goals; this mixture of ideals reflected, in turn, the needs of park supporters to portray Rocky Mountain in the most democratic fashion possible—as a place dedicated to "the freest use ... for recreation purposes by the public."

In a story on the ceremony held to dedicate Rocky Mountain National Park in September, 1915, the *Denver Post* concisely captured how most Coloradans probably conceived of the new reserve: wanted the new federal preserve to play: the Park, the *Post* boasted to its readers, was the "nation's newest playground."¹⁹⁹ What later generations would call ecological protection seemed to matter only to the extent that it facilitated public enjoyment. Tourists wanted to see large game animals, wildflowers, lush meadows, rugged mountain peaks, and healthy forests. The officials charged with managing the new park would do their best to give the people what they wanted.²⁰⁰

As a concession to park opponents, only a portion of the Upper Colorado watershed lay

¹⁹⁷ Quoted in *ibid.*, ch. 2, n.p., http://www.nps.gov/history/history/online_books/romo/adhi2.htm.

¹⁹⁸ U.S. Congress, Act of Jan. 26, 1915, 38 Stat. 798; this enabling legislation preceded the NPS Organic Act of 1916, and thus remains the guiding legislation for administering RMNP.

¹⁹⁹ Quoted in Buchholtz, *Rocky Mountain National Park*, 136.

²⁰⁰ Sellars, *Preserving Nature in the National Parks*; Jerritt James Frank, "Marketing the Mountains: An Environmental History of Tourism in Rocky Mountain National Park" (Ph.D. diss., University of Kansas, 2008).

within the borders of the new park. A line running from La Poudre Pass to the North Fork of the Grand River, then the North Fork itself, defined the Park's western boundary, with two important exceptions: the boundary excepted mining claims around Lulu City, as well as the town and lake of Grand Lake.²⁰¹ As the struggle continued between supporters and opponents of the Park, Congress adjusted Rocky Mountain's boundaries several times, but none of these changes had much effect on the Kawuneeche. Instead, the Forest Service, the Water Supply and Storage Company, and a few dozen homesteaders continued to own and manage much of the southern and western stretches of the valley.

Of greater significance to the Kawuneeche's future would be the passage in 1916 of the National Park Service Organic Act. This law created the National Park Service to administer the parks and charged the new agency with a weighty mission: "to conserve the scenery, the natural and historic objects and the wildlife therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations."²⁰² This mandate replicated the same potentially paradoxical combination of goals that Congress had articulated the year before in the act establishing RMNP: to provide for public "enjoyment" of national parks while conserving their "scenery," "natural and historic objects and ... wildlife," thus leaving these preserves "unimpaired" for perpetuity. These goals certainly seemed less difficult to reconcile in 1916 than they would in subsequent decades. After all, mass automobile tourism, with the skyrocketing visitation it would bring to the national parks, had only begun its meteoric rise, the science of ecology had just begun to take shape, and preservation remained a small movement with an elitist reputation that made statutory assurances that the national parks would facilitate widespread public use a political necessity. Thus a

²⁰¹ Union Pacific Railway, "System Map of Rocky Mountain National (Estes) Park Denver Mountain Parks," 1926.

²⁰² U.S. Congress, Act of Aug. 25, 1916, 39 Stat. 535.

necessary but difficult compromise came to dwell at the very heart of the Service—a compromise that would motivate no end of trouble for agency officials in the decades ahead, but one that also paved the way for national parks to earn broad popular affection and support.

Tourism, Nature, and Park Service Expansion

The prospect of Congress establishing a national park comprising parts of the Kawuneeche had prompted significant opposition. It thus might come as something of a surprise that Rocky’s creation initially brought only minor changes to the land. The Park Service had few qualms about perpetuating several important legacies of Forest Service and private management. The agency enlisted the Forest Service to help it suppress fire, for instance, and it sought to eradicate predators with at least as much zeal as its public and private predecessors.²⁰³ Fisheries management, though, probably offers the best example of the National Park Service’s willingness to continue established practices of manipulating the Kawuneeche environment that placed the desires of tourists, settlers, and other human constituencies above the needs of the region’s native ecosystems.

Settler Harry Harbison had opened the first hatchery in the North Fork Valley in 1894. A combination of private, state, and federal efforts ensued. The Leadville National Fish Hatchery began a small outdoor operation on the North Inlet of Grand Lake in 1904. The Grand Lake Improvement Association funded the construction of a hatchery structure in 1908.²⁰⁴ By the

²⁰³ Both of these policies are amply documented in the Superintendent’s Monthly Reports from RMNP’s early years.

²⁰⁴ Christopher M. Kennedy, “An Outline of the History of Fisheries Management on the West Side of Rocky Mountain National Park,” March, 2011, unpublished typescript in author’s possession, 1-3. Kennedy’s “Outline” contains ample reference to a wide range of primary and secondary sources; I rely

early twentieth century, fisheries managers had begun to propagate Colorado River cutthroat trout as well as rainbow and brook trout.²⁰⁵ Most recreational anglers of the early twentieth century, after all, wanted two things above all: to catch fish and, in the process, to enjoy as much “sport” as possible. Cutthroats were relatively easy to catch, a trait that hungry miners had much appreciated during the 1880s, but sport fishermen generally preferred rainbow and brook trout (which were native to the West Coast and East Coast of North America, respectively). Fisheries managers, for their part, preferred to propagate all three species. Rainbows and brookies grew more quickly than native trout; they also spawned in different seasons than cutthroats—a boon to hatcheries because they could raise multiple “crops” of fish in a single facility by rotating them seasonally. “Basically,” fisheries researcher Chris Kennedy explains, “they could triple the output of a hatchery by stocking multiple species.”²⁰⁶

After Rocky’s formation, Park officials participated extensively in efforts to stock the Kawuneeche’s waters with hatchery-raised fish. In late September, 1916, Rocky’s first superintendent placed trout—he mentions rainbows specifically—in various streams as he rode on horseback between Squeaky Bob Wheeler’s Hotel de Hardscrabble and the end of the Fall River Road.²⁰⁷ The next year, Trowbridge’s successor reported that the North Fork had been stocked with 40,000 “native trout,” the North Inlet with 60,000 “native trout,” the Little North Inlet with 30,000 “native trout,” and the “Grand River” with 185,000 rainbow trout.²⁰⁸ Many

very heavily on his research and interpretations here and in the next chapter, and I thank him for the courtesy of sharing his work.

²⁰⁵ Chris Kennedy of the U.S. Fish and Wildlife Service, the pre-eminent authority on RMNP’s fisheries, told me that “Most of the big egg collection points were in the western part of the state--Grand Mesa Lakes and Trappers Lake were probably the two big ones.” At various points, efforts were also made to collect eggs from fish spawning above Grand Lake. Chris Kennedy interview with author, Nov. 24, 2010, transcript in appendix and in RMNP Archives.

²⁰⁶ Kennedy interview with author.

²⁰⁷ Trowbridge, diary entry for Sept. 26, 1916, in SMR for Sept., 1916, Oct. 5, 1916.

²⁰⁸ R.A. Kennedy reporting for Way, SMR for Oct., 1917, Oct. 6, 1917.

streams and lakes in the Kawuneeche lay above waterfalls and other impediments that the endemic fish populations had never managed to breach. As Rocky's growing trail network made some of these waters more accessible, fisheries officials hastened to stock trout in these previously fishless waters; in 1918, Superintendent Way reported that "black spotted native trout were planted in Lake Nanita on August 28th, this being the first consignment of fry for this lake, due to inaccessibility, until the completion of the trail [to the lake] this month."²⁰⁹

Stocking trout in such numbers and with such little concern for existing ecological dynamics shows that early Park administrators privileged one aspect of their mission-- "to provide for the enjoyment" of Rocky Mountain--over another--to conserve its wildlife in an "unimpaired" manner.²¹⁰ In fact, the Park eagerly partnered with Grand Lake's tourism-oriented business community. The resort town's hotelkeepers, restaurateurs, and summer visitors had long supported fish propagation efforts of RMNP and other government agencies; they formalized their involvement with the 1926 founding of the Grand Lake Trout Club. The club's stated "object" was "to stock the barren lakes and streams that are at present not reached by the automobile tourist, so that real fishermen may be able to enjoy their favorite sport in the Grand Lake country in succeeding years."²¹¹

By 1930, these and other efforts to establish a sport fishery for trout in the Kawuneeche must have been causing widespread changes to the aquatic ecology of the lakes and streams affected by stocking. Rainbows began to interbreed with the old-timers, creating hybrids that would subsequently cause considerable challenges to those seeking to restore "native" fish. Whether native or exotic, stocked trout elevated fish populations; this, in turn, decimated

²⁰⁹ Way, SMR for Aug., 1918, Sept. 5, 1918.

²¹⁰ Kennedy, "Outline of the History of Fisheries Management on the West Side of Rocky Mountain National Park," 1-3.

²¹¹ *Estes Park Trail*, Sept. 3, 1926, quoted in *ibid.*, 3.

invertebrate populations in the Kawuneeche's waters and even slowed the reproduction of amphibians.²¹² Rainbows and brookies proved fiercely competitive, and they quickly overwhelmed cutthroats. John Holzwarth, Jr. readily noted the replacement of Colorado River cutthroat trout by brook trout on his family's property; "In 1916 the brooks got into the beaver ponds and established themselves, and the antives stayed in the ponds I would say off and on for about 8 or 9 years. Somewheres [sic] around in the 30' the cutthroats were gone."²¹³ Cutthroats and rainbows could also interbreed; efforts to enhance fishing in Rocky thus quickly muddied piscine gene pools in ways that took considerable effort to undo. Fish propagation under National Park Service management thus bequeathed a host of problems for the anglers, scientists, and Park managers of the future.

Road-building consumed even more energy than fish propagation during Rocky's first two decades in the Kawuneeche. And like hatcheries and stocking efforts, the construction of automobile thoroughfares demonstrated that Rocky's early administrators devoted substantially more effort to making the valley accessible than they did to what the act establishing Rocky called "the preservation of the natural conditions and scenic beauties thereof." The state of Colorado had launched construction of the Fall River Road even before the Park's creation, in 1914. This route crossed the Continental Divide near hunting grounds and travel routes long favored by the Utes and their Mountain-Tradition precursors. In 1915, meanwhile, Grand County began a road north from Grand Lake intended to link up with the Fall River Road. Funds

²¹² Ibid, 1-2; Frank, "Marketing the Mountains," 205-207. Fishery-reared rainbows were more likely to interbreed with Colorado River cutthroats than rainbows spawned *in situ*; See J. L. Metcalf, "Hybridization Dynamics between Colorado's Native Cutthroat Trout and Introduced Rainbow Trout," *Journal of Heredity* 99 (2008), 149.

²¹³ Means, comp., "Holzwarth Family," 19. Chris Kennedy explains that although considerable uncertainty remains regarding the source of this competitive advantage, researchers currently believe that as fall spawners (Colorado River cutthroats spawn in the spring), the introduced trout are big enough to secure preferential feeding positions in streams during the major summer feeding season. Kennedy interview with author.

proved tight, and the short construction season slowed progress. Finally, in September, 1920, the last link of road connecting the Park's east and west sides opened to automobile traffic.²¹⁴

Contemporaries hailed the Fall River Road as an engineering marvel. But the route was not for the faint of heart, with sharp curves, steep inclines, rough surfaces, and precipitous drop-offs. Early automobile tourists understood that adventure came with the territory, though. A 1919 article in *Motor Travel* magazine predicted that the route was destined to “become the most wonderful motor road in the world.”²¹⁵ The thrill of driving through the high Rockies provided an appealing complement to the awe, wonder, and pleasure visitors felt as they took in the sublime wonders of mountain scenery. As the driving tour from Estes Park to Grand Lake became the centerpiece of the Rocky Mountain National Park experience, growing numbers of tourists ventured into the Kawuneeche, at least during the peak summer travel season when the road across the Continental Divide was open.

The construction of this modern auto route required that work crews clear trees from the right-of-way, excavate materials from borrow pits near the road, and otherwise modify the Kawuneeche environment, the most significant long-run consequences of the Fall River Road probably stemmed from the boost the road provided to the struggling landowners of the valley floor. The Kawuneeche bottomlands were only a few miles wide, so almost every homestead lay within striking distance of the road. By the late 1910s, would-be homesteaders were more likely to drive cars than wagons or horses into the valley. The Fall River Road's completion also made it easier and cheaper for settlers—oldtimers and newcomers alike—to bring dairy products, hay, and other goods to Grand Lake and markets beyond. No less significantly, almost every

²¹⁴ Buchholz, *Rocky Mountain National Park*, 130-132. Musselman says road construction began in 1914, a date that seems more reliable than Buchholz's 1913. Musselman, *Rocky Mountain National Park*.

²¹⁵ Florence M. Pettee, “The Motorist's Colorado,” *Motor Travel* 11 (1919), 12.

homestead now lay on or near a major route for tourist traffic. Settlers such as Squeaky Bob Wheeler, who had been catering to tourists for well over a decade, almost certainly saw large increases in visitation after the road opened to travelers. Moreover, many parcels in the valley still remained open for entry. Settlers who moved into the Kawuneeche during the late 1910s and 1920s such as the Holzwarths surely understood that they were settling a country where national-park tourists were becoming an even more certain source of revenue than cattle, hay, and lumber.

Tourists wanted not simply to gaze upon the beautiful and awe-inspiring sights of the Rockies, but also to *experience* the Rocky Mountains in more visceral ways. Associating the mountains not simply with pristine nature, but also with a range of ideas about the mythic West, they wanted to sleep in a homesteader's cabin, ride trail through steep woodlands to an abandoned mining camp, sit around a campfire swapping stories with an old cowpoke, and try their hand at roping a calf. Settlers simultaneously catered to tourist desires, and shaped their expectations.²¹⁶ By the 1920s, many Kawuneeche Valley homesteads were offering at least some form of accommodations to tourists, and some had begun to orient a large part of their operations toward tapping into to the three-month burst of summer business that motored into the Kawuneeche from Estes Park and Grand Lake.

Rocky Mountain National Park officials looked upon the rising tide of tourism with a combination of approval and worry. In the early decades of the NPS, the agency's leaders often hailed statistics documenting rapidly increasing visitation to the Park as an index of their

²¹⁶ See Lawrence Borne, *Dude Ranching: A Complete History* (Albuquerque: University of New Mexico Press, 1983) and Thomas G. Andrews, "'Made By Toile'?: Tourism, Labor, and the Construction of the Colorado Landscape, 1859-1917," *Journal of American History* 92 (2005), 837-63.

success.²¹⁷ Yet even before the creation of the NPS, National Park advocates across the country tended to envision the federal government's preservation project as an alternative to and departure from the crass commercial exploitation that had marred Niagara Falls and other popular natural attractions of the early- to mid-nineteenth century.²¹⁸ As RMNP leaders launched two intertwined initiatives in the mid-1920s—expanding the Park's boundaries to encompass the Never Summer Range, and building a better road to replace the Fall River Road—they found themselves struggling to find a workable balance between encouraging tourism, on the one hand, and protecting Rocky's landscapes and ecosystems from the tourists who flocked into this extremely popular “playground.”²¹⁹

Rocky Mountain National Park administrators and advocates rightly treated the 1915 act creating the preserve as an incomplete and imperfect document. Among the many aspects of the legislation that failed to satisfy them were the boundaries it had established for the Park. In this regard, they were hardly alone; indeed, national parks across the nation frequently sought to adjust their boundaries. Because many of the adjustments desired or proposed involved the expansion of national parks at the expense of national forests, and because partisans of the two agencies tended to see themselves as engaged in a fiercely competitive, zero-sum game in which control over the nation's most significant public lands hung in the balance, leaders from the two agencies agreed to convene a joint committee to forge compromises on border controversies.²²⁰

²¹⁷ On NPS director Stephen Mather's celebration of rising visitation numbers in 1925, see Sellars, *Preserving Nature in the National Parks*, 60.

²¹⁸ Runte, *National Parks*, 8-9.

²¹⁹ On the larger struggle of which this comprised just one element, see Paul S. Sutter, *Driven Wild: How the Fight Against Automobiles Launched the Modern Wilderness Movement* (Seattle: University of Washington Press, 2002).

²²⁰ Hal K. Rothman describes the Coordinating Commission as “a committee formed to address the increasingly vicious conflict between the two agencies.” *On Rims and Ridges: The Los Alamos Area since 1880* paperback ed. (1992; Lincoln: University of Nebraska Press, 1997), 158. Stephen R. Mark likewise attributes the Coolidge Administration's 1924 formation of the commission as an effort to

This body, called the Coordinating Commission on National Parks and Forests, proposed a raft of boundary revisions in 1925 that affected several parks. In the case of Rocky, the boundary advocated by the commission would have placed almost the entire Kawuneeche Valley inside the Park's borders, with the exception only of the Grand Ditch right-of-way and those tracts on the valley bottom on which homesteaders had already filed papers.²²¹ The fight over the Never Summer annexation made it abundantly clear that the three major institutional entities holding vested rights to the Kawuneeche and its waters held competing visions of the valley and its future. The USFS, the WSSC, and their allies would eventually prevail over the NPS, but the lessons the Park Service learned in consequence would later serve the agency well.

The Forest Service first learned of the Park Service's intentions even before the Coordinating Commission met. In April, 1925, Forest Supervisor J. V. Leighou notified his superior: "It has come to my knowledge recently . . . that there is some agitation by outside parties, probably fostered by the [Rocky Mountain Parks] transportation company, for the inclusion of additional areas on the west side of the Continental Divide for inclusion in Rocky Mt. National Park."²²² As USFS officials feared, the NPS proposed later that year to expand Rocky to include "the area at the headwaters of the Colorado River. . . because its scenic character is regarded as more suitable for park purposes than for forest purposes." Back in April, Leighou had anticipated such a move by the Park Service; ever proactive, he ridiculed the notion that the Kawuneeche deserved to be incorporated into a Park that boasted some of the most stunning scenery in the entire Rocky Mountain chain: "there is clearly no justification for such

resolve "rancor between the two bureaus." *Domain of the Cavemen: A Historic Resource Study of Oregon Caves National Monument* (Oakland, Cal.: National Park Service Pacific West Region, 2006), 72.

²²¹ Buchholtz, *Rocky Mountain National Park*, 165.

²²² J. V. Leighou to District Forester, Denver, April 11, 1925, folder 422—"RMNP, 1925-'26," box 90, "Historical Files, 1900," Arapaho-Roosevelt National Forest Papers, Record Group 95, Records of the U.S. Forest Service, NARA-Denver.

an inclusion.”²²³ The battle lines between the two federal agencies thus fell into shape. The Park Service would seek to portray annexation as an extension of the critical work it had already undertaken within the existing boundaries of Rocky Mountain, while the Forest Service would try to keep the slopes of the Kawuneeche under its control by downplaying the area’s value as a preserve while seeking to cast the Park Service as an expansionary agency that increasingly pursued its own bureaucratic logic rather than fulfilling its statutory mission.

Rocky superintendent Roger Toll articulated the argument for annexation by explaining his agency’s philosophy of land acquisition:

Only superlative examples of American scenery are eligible to become a part of the national park system. The areas that are so included must be conserved for the present and for future generations. Lands chiefly valuable for mining, grazing, lumbering, reservoirs and similar commercial uses have no place in the national park system and the Park Service does not want them. The national parks should consist only of lands that are scenic in the highest degree, and whose values for recreational and educational purposes are so great that all other lesser values may readily be waived to attain the development for which the areas are best suited.²²⁴

For Toll, National Park lands were not worthless, but rather worth more in their “natural” state than if they were transformed by “commercial uses.”

²²³ Leighou to District Forester, April 11, 1925.

²²⁴ Roger Toll, “Proposed Park and Forest Boundary Changes,” December 8, 1925, Folder 40: “Chronological Survey of the Boundary Revision Proposals – 1925,” box 5, Series 2: L1417, RMNP Archives.

Toll claimed that the lands the NPS proposed to annex fell squarely within his agency's purview; Leighou, by contrast, focused on the valley's faults. The forester alleged that Enos Mills' "main reason for including" some of the Kawuneeche within the Rocky's original boundaries "was in order that it might become a game sanctuary"; he could imagine no other justification for expanding the Park into the Kawuneeche. Leighou even claimed to have conducted a hasty historical investigation that seemed to support his point-of-view. Looking back through correspondence from the early 1910s between the Park's creators and USFS officials, the forester claimed that he could find "no contention that [the western portion of the park] was within the bounds of an area which was of National importance from a scenic standpoint."²²⁵ Leighou explained that the NPS had turned its back on the more permissive vision of national-park management Smith Riley had articulated back in 1910 by eliminating grazing and logging from Rocky Mountain; borrowing a page from Grand County's Park opponents, the forester also groused that the Park's creation had also restricted "agricultural development . . . to areas under cultivation prior to the time of the creation of the Park."²²⁶

Leighou's implication was clear: Supporters of Rocky Mountain National Park had previously conceded that the Kawuneeche was unsuitable for national park purposes, so the boundary extension proposal constituted a disingenuous—and hence alarming—intensification of the NPS's effort to wrest as much land as it could from Forest Service control. Worse, the Park Service seemed intent on turning back the clock on the valley's development by eliminating cattle, sheep, sawmills, and new homesteads. Leighou even went so far as to suggest that the USFS should wage a counter-attack. Rather than allowing the Park Service to encroach further upon its lands, the Forest Service, he urged, should not only block the annexation of the Never

²²⁵ Leighou to District Forester, April 11, 1925 and attached report.

²²⁶ Ibid.

Summers; it should also try to get the Kawuneeche back. “Insofar as outstanding scenic features are concerned,” he dryly noted, “there are none within the area.” The valley “was not one of National importance,” Leighou concluded, “but is merely an area similar to other areas within the Rocky Mountain region.”²²⁷ Leighou’s counterproposal never gained traction, but it did illustrate the intense conflicts that raged between the two agencies during the mid-1920s.

The Forest Service was hardly alone in its opposition to the 1925 boundary extension scheme. A coalition of Boulder business and civic leaders objected to a proposed extension of the Park’s southern boundary that would have incorporated most of the Indian Peaks in Rocky; elite Boulderites particularly objected to the prospect of the Park gaining control of Arapaho Glacier, the municipally-owned source of the town’s drinking water.²²⁸ The Water Supply and Storage Company also mounted what one forester would later recall as “considerable opposition,” with the company’s representatives “ma[king] a strong protest against the transfer.”²²⁹ Thanks to the combined forces of the WSSC, Boulderites, and other opponents, Congress determined not to expand Rocky Mountain National Park.

The Park Service, despite the failure of the 1925 extension proposal, pushed on. Five years later, in 1930, Superintendent Edmund B. Rogers recommended that Congress transfer “approximately twenty-two square miles” of Forest Service land to Rocky; Rogers’s proposal included virtually the same tracts of the Never Summer Range at stake in 1925, though not the Indian Peaks. In a letter to the director of the NPS, Rogers justified his plan using several criteria; the Never Summer addition, he argued *contra* Leighou, was “of great scenic grandeur and geological interest”; the parcel “comprise[d] a natural unit of the Park”; it included “winter grazing grounds of the park wild life [sic], particularly the mountain sheep”; and it was

²²⁷ Ibid.

²²⁸ Buchholtz, *Rocky Mountain National Park*, 165.

²²⁹ Allen Peck to Chief of the USFS, folder 427, box 91, RG 95, NARA-Denver.

“enclosed on three sides by game sanctuaries, Rocky Mountain National Park on the east, and a state game sanctuary on the north and west, but it ha[d] no protection itself.”²³⁰ Setting aside the criteria Rogers listed, though, it is apparent that two unspoken desires also motivated the Park Service expansion plan: first, to solidify its authority over Trail Ridge Road, which was already under construction, and second, to protect the new road’s approach from Grand Lake and its viewshed down into the Colorado River headwaters. Park officials believed that these two factors would determine whether the new keystone of Rocky Mountain National Park, Trail Ridge Road, could give tourists the experience of high-country splendor that had brought them to the Park in the first place.



Trail Ridge Road construction loops around Rainbow Curve, 1930. The steamshovel is making rapid progress through a forest showing the effects of wildfire. The alpine thoroughfare linking the east and west sides of RMNP increased the amount of automobile traffic and visitation to the Kawuneeche Valley. Meanwhile, the Never Summer addition set the National Park Service on

²³⁰ Edmund B. Rogers to NPS Director, Jan. 17, 1930, folder 37: “Chronological Survey of the Boundary Revision Proposals – 1930,” box. 5, Series 2: L1417, RMNP Archives.

the path toward consolidating ownership and control over the valley. Dorr C. Yeager photograph, 1930, catalog #11-B-2, negative #803, RMNP Photo Collection.

Initial planning for Trail Ridge Road began in 1926; Congress appropriated funds for the road in 1929, and construction began that October, on Rocky's east side.²³¹ As Park officials hitched Rocky's future to the Trail Ridge project, the Never Summer extension became an integral part of their plan. J. V. Leighou of the Forest Service remained outspoken in his opposition to the extension. "The only possible use that the tourists would be likely to make of this country," the forester scoffed in a 1930 letter, "would be to look at it from the . . . road."²³² The forester's quip actually cut to the heart of the matter. There is little evidence that Park officials actually felt an urgent need to establish a more defensible boundary for Rocky Mountain National Park; few poachers, shepherds, or timber thieves, after all, had ever ascended the Continental Divide to avoid detection by park rangers. Nor was game habitat under any clear or present threat. In reality, their primary desire was to increase the likelihood that auto tourists, having climbed up the dizzying heights from Estes Park and traversed several miles of stunning high-alpine tundra, could feast their eyes upon their descent into the Kawuneeche on a scene that fulfilled the expectations of primitive grandeur the Park Service had cultivated as the agency's "brand."

As the Forest Service rallied to oppose annexation, the WSSC again stood poised to enter the fray in defense of its prized Grand Ditch. But advocates of boundary extension, having learned important lessons from their 1925 defeat, inserted sufficient language in the new annexation bill to assuage the water company's fears. Together, these concessions to the Grand Ditch and the elimination of the Indian Peaks from the expansion proposal sufficed to gain

²³¹ Mussellman, *Rocky Mountain National Park*.

²³² Leighou to District Forester, April 29, 1930.

congressional support for the measure. In July, 1930, Congress passed an act authorizing the transfer of Forest Service lands in the Upper Kawuneeche to Rocky Mountain National Park while protecting the Grand Ditch and the farmers who depended upon it.

As a result, the ditch would remain, but the future of the homesteads on the Kawuneeche Valley floor grew less certain. As the Park Service assumed management over the upper portions of the valley, two stockowners had to find another place to pasture for roughly 1400 head of sheep (the USFS reported neither cattle nor horses grazing on these lands as of 1930).²³³ The NPS also banned logging, hunting, and other activities the USFS had permitted since the creation of the Medicine Bow Reserve nearly three decades earlier. Settlers hamstrung by their need to pursue a range of land-use strategies in their struggle to make the Kawuneeche into a home place now faced narrowing possibilities for extractive uses of the landscape. At the same time, though, the Never Summer addition enhanced the practicability and profitability of tourism in the valley.

Most Grand County residents evidently still believed the Kawuneeche Valley had a higher destiny than to become an epicenter for automobile touring, trail riding, and dude ranching. A petition passed by a joint meeting of citizens and the Grand County board of commissioners in November of 1931 followed the template laid down by anti-Park partisans of the 1910s. In the process, it sounded a warning: the Never Summer annexation had passed into law, but Rocky Mountain National Park officials could expect a fierce fight if they attempted to expand Park boundaries again: “The people of Grand County are bitterly opposed to further additions of this nature,” the petition warned, “for the reason that such additions would seriously interfere with the development and utilization of the valuable natural resources in the regions adjacent to the present National Park boundaries, and would impose serious hardships on private

²³³ Ibid.

enterprises already established within and adjacent to these areas.”²³⁴ The citizens and officials of Grand County were particularly nervous about the possibility that Rocky might engulf the Baker Gulch-Bowen Gulch area, on the slopes of the Never Summer Range just to the south of the 1930 boundary between the NPS and national forest land. Local residents had good reason to worry; the Park was indeed considering the possibility of such a boundary extension, but dropped the idea in early 1932, perhaps because of Grand County’s opposition.²³⁵ From that point down to the present day, the Forest Service and the Park Service would hold fast to adjoining bailiwicks on the western side of the Kawuneeche, with the Grand Ditch cutting through and connecting lands under USFS administration with those managed by the NPS.

Conclusion

By the early 1930s, three sets of dynamics had served to remake the Kawuneeche Valley. The rise of irrigated agriculture along Colorado’s Front Range led the Water Supply and Storage Company to construct the Grand Ditch along the sides of the Never Summers. Down on the valley bottom, meanwhile, homesteaders labored mightily to establish and hold on to mixed farms in an area ill-suited for agricultural settlement. Finally, the federal government placed almost every other acre of land in the North Fork watershed under the control of either the Forest Service or the Park Service, two agencies that rarely saw eye-to-eye. This trio of developments

²³⁴ R.O. Throckmorton, Clerk of the Board of County Commissioners, Grand County to The Director, National Park Service, November 17, 1931. Bx. 5, Folder 36: “Chronological Survey of the Boundary Revision Proposals – 1931,” Series 2: L1417 - Boundary Adjustments, Rocky Mountain National Park: Land Records, 1915-1990. RMNP Archives. For a response, see Ray Lyman Wilbur to R.O. Throckmorton, Clerk of the Board of County Commissioners, Grand County, November 25, 1931. Bx. 5, Folder 36: “Chronological Survey of the Boundary Revision Proposals – 1931,” Series 2: L1417 - Boundary Adjustments, Rocky Mountain National Park: Land Records, 1915-1990, RMNP Archives.

²³⁵ See File 602 “Resume of Proposals to Change the Authorized Boundaries of Existing Areas” “report on Boundary Revision Proposals 1915-1947” RMNP. The proposal would resurface in 1938, only to generate opposition once again.

brought widespread social, political, economic, cultural, and environmental changes to the valley, turning the Kawuneeche into a fragmented landscape shaped by decades of toil and conflict. By investing the Kawuneeche with new and difficult to reconcile meanings—the valley was alternately source of life-giving waters, a stern but lovable homeplace, and a source of escape from the industrial modernity—reclamation advocates, high-plains farmers, settlers, bureaucrats, and tourists set the stage for ongoing debates over how best to conceive, manage, and interact with this land and the organisms inhabiting it.

Chapter 4:

Consolidating the Kawuneeche

By the 1930s, the Kawuneeche Valley had experienced decades of domestication. Yet far from taming the valley into some dull conformity, the changes initiated by ditch-building, homesteading, and federal conservation in fact accentuated the valley's pre-existing environmental heterogeneity. Roughly two dozen private landowners, the Water Supply and Storage Company, the U.S. Forest Service, and the National Park Service each possessed disparate legal, economic, political, and moral claims to the land. Each held fast to its own vision of what the valley was and what it might become: a homeplace whose soils could yield sustenance to those possessing the toughness and flexibility to combine mixed farming with other subsistence and market activities, a source of life-giving irrigation water, a reserve of natural resources to develop in order to deliver "the greatest good for the greatest number for the longest time," a refuge where denizens of an increasingly urbanized, industrialized nation could restore their sagging spirits by gazing upon beautiful and sublime scenery and communing with wild nature. In attempting to make the valley better match their disparate visions for this shared landscape, each of these entities deployed distinct strategies, technologies, and ideologies. As a result, a messy landscape grew messier still.

In contrast to the era of divergence that prevailed from the 1880s through about 1930, the history of the Kawuneeche since 1930 is partly the story of the campaign one landowner, the National Park Service, waged to attain homogeneous control over the valley's property rights—and partly the story of the Service's mixed success at achieving the understanding of and control

over nature that it sought. From the passage of the Never Summer annexation bill more than eighty years ago to the present day, the NPS has attempted but sometimes failed to unmake the legacies bequeathed by earlier phases of the valley's history, particularly mining and homesteading. Ostensibly aiding the park service in its efforts were growing Congressional appropriations, as well as broader societal shifts that served to popularize tourism, make the Kawuneeche more accessible to growing numbers of visitors, generate greater political support for environmental protection, and improve the Park Service's capacity to monitor, analyze, and respond to ecological and social challenges in the valley.

An array of powerful factors, though, have collectively undermined the Park Service's efforts. Rocky Mountain's budget swelled, yet appropriations nonetheless remained inadequate, particularly because until quite recently, park officials almost invariably prioritized the needs and problems of the east side to the detriment of the Kawuneeche. Automobile tourism and outdoor recreation brought unanticipated and often daunting problems. The Water Supply and Storage Company steadfastly maintained its claims to the Kawuneeche and Colorado River water. Landowners on the valley floor often proved reluctant to sell their properties to the government. The ceaseless dynamism of the Kawuneeche's ecological and hydrological systems defied human efforts to make sense of the valley's environments. Ecological, social, and political uncertainties and complexities thus stymied NPS management efforts. Meanwhile, Rocky's boundaries proved all too permeable: ungulates and insects, climate systems and social movements and many other things continued to pass into and out of the Park from the outside world. The simplification of ownership and management in the Kawuneeche, in short, failed to contain the contentious complexity that had long characterized its ecological and social relationships.

Meanwhile, restoring the Kawuneeche to an imagined “pristine” or “natural” state belied the Kawuneeche’s extremely long history of human habitation and landscape use. The Park Service essentially tried to create something which had never really existed before: a post-glacial landscape devoid of human beings or, alternately, a rustic throwback to a simpler, better time and place occupying a liminal moment safely tucked away between the violence of Ute removal and the disenchantment of modernity. Both the exigencies of park management and the inherently contradictory nature of the pristine and pioneer ideals that informed restoration efforts propelled park officials to engage in frequent compromises.

By the 1970s, some of the limitations and contradictions of the Service’s efforts to homogenize the Kawuneeche were growing impossible to sustain. A search for alternative paradigms ensued. Today, the NPS seems increasingly convinced that the Kawuneeche is best understood and managed as the hybrid embodiment of more than ten millennia of interactions between complex environments and diverse human populations. Translating this conception into workable policies that fulfill the Service’s obligations—both to the American people and to the natural world—remains a challenging and often delicate task.

The Grand Ditch: Aesthetic and Environmental Harm

As a consequence of the Never Summer addition, Rocky Mountain National Park has almost entirely encircled the Grand Ditch since 1930, though the upper stretches of the conduit continue to pass through National Forest land. This arrangement is the result of the compromise forged between the NPS and the Water Supply and Storage Company at the time of the annexation campaign: the ditch company dropped its opposition to the Never Summer addition, while the Park Service consented to add language to the annexation bill that prevented the NPS

from interfering with the ongoing operation of the diversion. Importantly, the annexation bill addressed not just the existing ditch and its right-of-way, but also an as-yet-unbuilt line of ditch running all the way to Baker Gulch. The subsequent extension of the Grand Ditch along this line succeeded at delivering even more water to stockholders of the Water Storage and Supply Company. At the same time, though, the project laid the groundwork for ongoing conflicts that pit the Park Service's commitment to preserving scenic and ecological values against the WSSC's effort to bring the plentiful moisture of the high country to thirsty farms of the plains.

Soon after construction crews finally returned to the Grand Ditch in the summer of 1934 with instructions to resume construction, trouble erupted between the WSSC's contractors and their employees. Several months later, ditch construction crews led by a steam shovel had covered considerable ground, extending the ditch to within "five hundred feet from Lost Creek." There, foreman Job Baker's workers abruptly quit. "Despite urgings to stay and finish the ditch to water that fall, the men came down to the plains," forcing the company to find a new crew, which managed to keep working in the face of the cold and snow of late fall all the way through the end of November.¹ After allotting more funds for construction, the WSSC launched the 1935 work season.² Even so, progress again lagged behind expectations. That July, company officers sought to speed up progress on the ditch extension by executing a contract with Gordon Construction of Denver, by which Gordon obligated itself to extend the ditch six miles to Baker Gulch by August of 1936.³ Trouble once again developed, though. The construction firm alleged that the ditch company had grossly underestimated the quantity of material required to

¹ Russell N. Bradt, "Foreign Water in the Cache La Poudre Valley" (master's thesis, Colorado State College of Education, 1948), 14.

² *Ibid.*, 14.

³ Patrick McKnight, "The Water Rights of Rocky Mountain National Park: A History," typescript (n.p.: n.p., 1983), 39.

carve out the ditch from the slopes of the Never Summers. By the start of 1936, the construction company had completed only three miles of work. Gordon's steam shovel, after laying off for the winter, pushed construction onward throughout the summer of 1936. Crews finally reached the ditch's terminus at Baker Creek on September 2.⁴

The WSSC had spent more than \$400,000 to finish the last six miles of the Grand Ditch. The completed diversion was more than fifteen miles long, and could carry prodigious quantities of water.⁵ The ditch not only brought water from the watershed of the Colorado River into that of the Poudre; it may also have enabled fish to swim between the two basins. In the case of trout, this unprecedented environmental event may even have caused previously isolated gene pools of two native trout subspecies—greenback cutthroats from the eastern slope of the Rockies, and Colorado River cutthroats from the western slope—to mix, further complicating an already complex set of fisheries management challenges in the region.⁶

RMNP officials kept close tabs on the ditch. After construction drew to a close, the Service pushed the water company to clean up the messes its crews had created in the course of construction. Ranger Sterling Vaughn, for instance, complained in 1936 that Ditch Camp One was “very unsightly,” and Camp Six “very untidy and unsightly.”⁷ Vaughn eventually prevailed upon WSSC employees to clean up these sites that summer. “Such items as the following,” Vaughn noted with no little pride, “have been covered up or otherwise agreeably disposed of: blacksmith shop at camp six, tent frames south of camp six, bunkhouse roof at camp five, small

⁴ Russell N. Bradt, “Foreign Water in the Cache La Poudre Valley” (master's thesis, Colorado State College of Education, 1948), 15-16.

⁵ In 1955, the ditch was reported as delivering 20,000 acre feet of water. Anon., “Grand River Ditch-July 1955,” W-43, NPS Water Resources Division, “Documents Relating to the Grand River Ditch in Rocky Mountain National Park,” vol. 1.

⁶ Christopher M. Kennedy, “An Outline of the History of Fisheries Management on the West Side of Rocky Mountain National Park,” March, 2011, unpublished typescript in author's possession, 2.

⁷ Vaughn, “Operations of the Water Supply and Storage Co., on the Grand Ditch,” July 6, 1936, report no. 1.

building at Gordons [sic] old campsite, several small piles of wood and lumber, numerous barrels, grease buckets, machine parts and other evidences of construction work.”⁸ Vaughn conceded that “to a Park Service landscape architect, the ditch would still present a very unsightly appearance, but to one who has been familiar with the scene for the past two or three years it presents a one hundred percent improvement.”⁹ In the years ahead, both Forest Service and Park Service officials continued to pressure the WSSC to keep the ditch and right-of-way clear of unnecessary refuse. In 1966, for instance, forest ranger Richard Hauff claimed that the ditch company had left large amounts of debris along the right-of-way while failing to remove a “steam shovel knocked off the ditch into Baker Gulch by an avalanche some years ago.”¹⁰

Even more visible than messy camps and toppled steam shovels, of course, was the expanded Grand Ditch and its right-of-way as it snaked along the Never Summers from Baker Gulch toward the Kawuneeche’s southern end to La Poudre Pass at the valley’s head. The combined width of the ditch and the service road built atop the downslope bank approximated that of a two-lane highway; cribbing, fills, and bridges served to lift much of the ditch and road above the natural slope. Along several stretches, the ditch required considerable blasting, which often left behind wide areas of sharply sloping land devoid of vegetation but covered with debris. The application of common construction techniques to a high mountain environment resulted in a massive man-made feature whose presence within Rocky Mountain seemed anomalous given the Park Service’s preservationist mission. No surprise, then, that a long string of Park Service

⁸ Sterling Vaughn, “Operations of the Water Supply and Storage Co., on the Grand Ditch,” Sept. 6, 1936, report no. 3, folder: “Water Supply and Storage Company,” box 18, “General Correspondence Files, 1927-1953,” Records of Rocky Mountain National Park, NARA-Denver.

⁹ Ibid.

¹⁰ Richard T. Hauff to WSSC c/o Ward Fischer, Aug. 10, 1966, W-135, NPS Water Resources Division, “Documents Relating to the Grand River Ditch in Rocky Mountain National Park,” vol. 2.

pronouncements stretching back to the 1930s decried the Grand Ditch as a “scar” upon the land.¹¹

As a result of the legislative compromise of 1930, NPS officials lacked authority over the ditch itself. This could not stop them, however, from complaining often and loudly about the ditch’s aesthetic impact. When a Ft. Collins booster contacted Superintendent David Canfield with a three-part scheme that involved diverting the Grand Ditch through the newly-completed Colorado-Big Thompson Project, abandoning the present ditch along the Never Summers, and building a new road on the ditch right-of-way to connect Fort Collins with Grand Lake via Poudre Canyon, Canfield lamented: “the ditch scar is there from now on as it must be considered practically impossible ever to obliterate it.”¹² As Canfield understood, the waters diverted by the Grand Ditch made this “scar” extremely valuable to the water company’s shareholders, particularly following World War II, as burgeoning suburbs and skyrocketing populations unleashed a fierce scramble for water. The WSSC, in short, was sitting on a gold mine far more valuable than any ever discovered in the Kawuneeche, and the Park Service had no chance of convincing Congress to appropriate the astronomical and ever rising sum it would take to buy out the WSSC, remove the Grand Ditch, and remediate the extensive transformations the diversion had imposed on the valley landscape.

Park officials grudgingly accepted that the ditch was destined to stick around for perpetuity, but this made them even more keen to minimize its visual impact. Park staff continued to beseech the water company to remove abandoned cabins at ditch camps, as well as

¹¹ Jeffrey S. Hickey, “An Uneasy Coexistence: Rocky Mountain National Park and the Grand Ditch” (master’s thesis, University of Colorado at Boulder, 1988), 178-181.

¹² Canfield to Regional Director, Region Two, Aug. 23, 1949. Hopes of using the Colorado-Big Thompson Project in lieu of the Grand Ditch, and of using the Grand Ditch right-of-way for a new scenic road, remained bright in 1962. Regional Director to Superintendent, April 12, 1962. Grand Lake Chamber to Allyn Hanks, Supt., May 7, 1962, W-289, NPS Water Resources Division, “Documents Relating to the Grand River Ditch in Rocky Mountain National Park,” vol. 4.

to dispose of the trees and brush it cleared, as well as the trash and surplus lumber crews threw out as they worked. The Service's overriding goal in all of these efforts was to limit the ditch's negative impact Rocky's prized viewsheds along Trail Ridge Road—prime tourist attractions from the road's completion to the present day. If the ditch "scar" itself could not be healed, at least the NPS could ask the water company to hide evidence of past and present work along the ditch. In 1936, for instance, ranger Vaughn prevailed upon ditch company foreman Billington to insure that a new machine shed would "be satisfactorily hidden from the public's view." Vaughn also urged the Park superintendent to permit the company to replace its Camp Six with a new camp for ditch workers on Lost Creek, noting that such a move "would be advantageous to the Park as camp six is very much in evidence from the valley and from Trail Ridge Road, while the opposite would be true about the camp on Lost Creek."¹³ Vaughn's efforts helped to keep tourists from gazing upon shacks and sheds as they took in the mountain glories of the Never Summers.

Tensions remained nonetheless. In 1968, a Park Service solicitor prepared a memo enumerating his agency's objections to the WSSC's "maintenance and management of the Ditch." The NPS alleged that "The Company has indiscriminately dumped debris over the bank of the Ditch," "refused to provide crossings for established trails pursuant to provisions of the easement and stipulation," and "dumped water into areas that were not natural drainage areas and refused to do cleanup work requested by the Park Service." Because of "improper maintenance by the Company," the Park Service attorney claimed that "the ditch was seeping water. Erosion "below the outlets along the Ditch" intensified, undermining "living trees." The solicitor's litany went on: "Scars have appeared on the mountainside, banks and meadows have deteriorated, peat

¹³ Vaughn "Operations of the Water Supply and Storage Co., on the Grand Ditch," July 31, 1936, report no. 2.

beds have been undercut and fallen into the stream channel, and the area has been strewn with large amounts of structural timber, abandoned tools and equipment, remains of old construction camps and a telephone line.” As this list of complaints showed, the growing importance of ecology in Park management led the Service to add to the traditional complaints that the diversion marred the valley’s scenery a new kind of charge: the ditch injured the Kawuneeche environment.

As the Park Service was beginning to understand, the Grand Ditch posed both acute and chronic threats to the Kawuneeche’s ecosystems. The most basic problem with the ditch was that it usually did the job it was intended to do: it diverted water that would have continued downstream into the North Fork to the Poudre. Throughout its history, the WSSC has kept the ditch open between late spring and fall, carrying water away from the valley floor during the period when streams were at their fullest. The ditch suffered from relatively high seepage; not all the water that entered the ditch actually left the valley. Even so, the ditch fundamentally altered how water moved through the Kawuneeche.¹⁴ Average summer water levels in the Colorado River consequently dropped an estimated 10 to 20 cm.¹⁵

The impact of diversion has proven particularly intense during the weeks of peak runoff. Nearly 60% of the watershed’s pulse of spring and summer run-off was captured by the ditch. Prior to the ditch’s completion, pulses of high water in the early summer sometimes caused the Colorado and its tributaries to burst their banks; diversion reduced the frequency of such floods, with a suite of secondary effects. Researchers Jordan Clayton and Cherie Westbrook suggested in a 2008 study that the Grand Ditch reduced the “frequency of bed disturbance in the upper

¹⁴ See fig. 5, Jordan A. Clayton and Cherie J. Westbrook, “The Effect of the Grand Ditch on the Abundance of Benthic Invertebrates in the Colorado River, Rocky Mountain National Park,” *River Research and Applications* 24 (September 2008).

¹⁵ Scott W. Woods, “Ecohydrology of Subalpine Wetlands in the Kawuneeche Valley, Rocky Mountain National Park, Colorado” (PhD diss., Colorado State University, 2001), 20-30.

Colorado River”—a worrisome development because it caused declines in “habitat conditions for both benthic invertebrates and trout species.”¹⁶ Willow regeneration has also slowed as a consequence of reduced flooding, since young willows need wet, bare patches of sediment-rich soil if they are to thrive.¹⁷ Lower streamflows in the Kawuneeche during summer have even caused the valley’s water table to drop considerably, meaning that the roots of some plants can no longer reach the water they need to survive.¹⁸ Lower water tables starve some wetlands of moisture, particularly during drought years; as a result, peat in some of the Kawuneeche’s fens has begun to break down and the tender seedlings of many wetlands plants have perished.¹⁹ No wonder that ecologists Jordan Clayton and Cherie Westbrook have recently argued that the Grand Ditch’s “continued use may be detrimental to the health of the stream ecosystem of the upper Colorado River.”²⁰ In the course of doing the job its builders intended it to do, the Grand Ditch has reconfigured age-old hydrologic and ecologic patterns in the Kawuneeche.

Just as importantly, water diversion also introduced more calamitous possibilities. Contemporary observers in the late nineteenth and early twentieth centuries sometimes hailed the ditch as an engineering marvel. But the structure did not always function as planned. Its basic fault was that engineers had designed the ditch as an exercise in statics, but the ditch and its banks turned into dynamic entities. Clinging to steep, often porous slopes, built almost entirely

¹⁶ Clayton and Westbrook, “Effect of the Grand Ditch on the Abundance of Benthic Invertebrates in the Colorado River,” 985. More generally, see Sandra Ryan, “Effects of Transbasin Diversion on Flow Regime, Bedload Transport, and Channel Morphology in Colorado Mountain Streams” (Ph.D. diss., University of Colorado at Boulder, 1994).

¹⁷ Woods, “Ecohydrology of Subalpine Wetlands in the Kawuneeche Valley.”

¹⁸ Woods estimates the maximum drop in water table at 20 cm; his research shows that the water table was most affected near the Colorado, and less affected near toe-slope areas, where groundwater was recharged from other sources. Ibid.

¹⁹ Rodney Chimner and David Cooper, “Carbon Dynamics of Pristine and Hydrologically Modified Fens in the Southern Rocky Mountains,” *Canadian Journal of Botany* 81 (May, 2003), 488.

²⁰ Clayton and Westbrook, “Effect of the Grand Ditch on the Abundance of Benthic Invertebrates in the Colorado River,” 985.

of earth, and subject to heavy seepage, the ditch failed on a number of occasions at several locations, unleashing debris-strewn torrents that cut straight downhill to the valley floor.

Water company officials worked with state authorities to avoid breaches, but mitigation efforts could cause problems in their own right. In a particularly well-documented incident in the summer of 1965, for instance, the state engineering department, worried because a spate of heavy rain had filled Long Draw Reservoir to capacity, ordered the WSSC to discharge water through the Grand Ditch's spillways. As water raced downslope in stream courses that had not carried their full share of summer run-off for several decades, this intentional discharge "caused serious erosion, besides uprooting and killing many trees."²¹ RMNP Superintendent Granville B. Liles later informed WSSC President Harvey Johnson that "There was observed considerable damage to the area, in the Park, west of the Colorado River where Little Dutch [Creek] empties into the river[,] . . . near Lulu City."²² Indeed, once the water released from the ditch reached the valley floor, it tore out several beaver dams, adding the water impounded behind these rodent-built structures to the flood coursing down the Colorado River.²³ That stream consequently burst from its banks above the Never Summer Ranch, causing considerable damage to the Holzwarth's property. John Holzwarth, Jr. claimed that the flooding had cost him around \$15,000, at the time a very large sum; Holzwarth accused the ditch company of negligence, alleging that it had failed to construct head-gates along the ditch, which would have provided the company more control over the flow of water between the ditch and the streams that emptied into the conduit.²⁴

²¹ Robert W. Woods to Phillip R. Iversen, June 29, 1966, W-138, NPS Water Resources Division, "Documents Relating to the Grand River Ditch in Rocky Mountain National Park," vol. 2.

²² Granville B. Liles to Harvey Johnson, Oct. 18, 1965, W-163, NPS Water Resources Division, "Documents Relating to the Grand River Ditch in Rocky Mountain National Park," vol. 2.

²³ John Holzwarth to Wayne Aspinall, August 10, 1965, W-32, NPS Water Resources Division, "Documents Relating to the Grand River Ditch in Rocky Mountain National Park," vol. 1.

²⁴ Don H. Sherwood, petition, *In the matter of John G. Holzwarth vs. the Water Supply and Storage Company*, n.d., enclosure in Johnnie Holzwarth to George Hartzog, Jan. 11, 1967, W-4, *ibid.*

The 1965 spillover and flood illustrated the ease with which nature continued to traverse property boundaries bequeathed by the interplay of homesteading, irrigation development, and federal conservation during the late nineteenth and early twentieth centuries. The crisis also prompted Rocky officials to push the ditch company to take greater responsibility for maintaining the canal and remedying the problems diversion inflicted on the lands below. As Superintendent Fred Novak warned a ditch company executive in 1966, “We have been making a rather extensive and intensive study of problems along the Grand Ditch. Perhaps the flooding North Fork of the Colorado River in June of last year made us more aware of an existing problem. However, we are all conscious of a growing awareness in land conservation and beautification among the American public.” Now that Novak had begun to see the Park in the new light cast by modern environmentalist thinking, he felt regret that “in the past, many practices were taken for granted.” The benighted practices of the past, he believed, “today need to be re-examined to further better management of our natural resources.” Novak then proceeded from from generalities to specifics. He broached the possibility of restoring vegetation “to some of the slopes which are now exposed and are increasingly becoming a dominant scar on the landscape.” He also requested that the ditch company take several additional steps: adopt more care in dumping “rock, sand, and other material”; remedy two spills of “an abnormal volume of water in an unnatural drainage” caused by poorly-placed diversion culverts; beautify further “old construction camps”; and provide crossings “to accommodate horses and foot travel” at Thunder Pass Trail and Ditch Camp No. 2.²⁵ Novak and other Park officials could not dictate to the WSSC, but they nonetheless held out hope that they could prevail on the company to minimize the Grand Ditch’s aesthetic and ecological effects.

²⁵ Fred J. Novak to Harvey Johnson, September 23, 1966, W-15, *ibid.* Novak mentions common practice of WSSC of spilling water at a few locations which now are heavily eroded.

Though the WSSC may have followed through on some of Novak's wish-list, the in-built tension that had characterized relations between the NPS and the WSSC since 1930 persisted, in no small part because tourists complained to the Service about the ditch. W. C. Worthington of Ohio, for instance, grumbled in 1970 that "When one uses the various trails established by the Park Service on the west side of the park, one can see the terrific amount of damage that has been done over the years and continues, as a result of poor maintenance and management of this open ditch. Large amounts of water each year are diverted from this ditch down the mountainsides," Worthington claimed, "causing severe erosion and the silting of the many valley streams, the principle [sic] being the North Fork of the Colorado River." Worthington continued: "I know there are laws prohibiting littering as well as destruction to flower [sic] and fauna within our National Park boundaries perpetrated by individuals." The visitor concluded his diatribe by questioning the apparent disparity between the stringent regulations the Park imposed on individuals, and its anomalously permissive treatment of the WSSC: "how a private, commercial, and profit-oriented company is allowed to continually, year after year, cause irreparable damage within the Rocky Mountain National Park, is beyond my comprehension."²⁶ If Worthington's remarks are any indication, the presence of the Grand Ditch within the boundaries of Rocky Mountain struck many visitors as nothing less than a violation of the National Park ideal.

Rocky Mountain National Park officials responded to Worthington's complaint (which had been forwarded to them from the office of Congressman William E. Hinshall) not by complaining that Congress had largely tied their hands through the 1930 Never Summer addition act, but instead by highlighting the progress they believed the Service had made in convincing

²⁶ W. C. Worthington to Walter J. Hickel, Secretary of the Interior, October 12, 1970, W-91, *ibid.*

the ditch company to clean up its act. “During the past two years,” Rocky’s Theodore Thompson reported:

the National Park Service has initiated a concentrated program with the Ditch Company to correct some remaining difficiencies [sic] in operating practices and maintenance standards. During this period, 12 new headgates have been installed, 1,600 feet of badly eroded ditch has been rehabilitated and a contract study of seepage areas is presently being conducted by Colorado State University. In addition, considerable general cleanup work has been accomplished. The Company has purchased a new snow removal machine which should minimize damage during the spring opening of the ditch. With our present program,

Thompson optimistically concluded, “we feel that in the near future the ditch will be brought to a standard that is acceptable as possible with this type of intrusion in an otherwise wilderness area.”²⁷ Beneath Thompson’s positive assessment of the program’s prospects, of course, lingered the suspicion that none of the measures he enumerated could do anything to remedy the basic contradiction posed by this “intrusion in an otherwise wilderness area.”

If the NPS and WSSC achieved some success in cleaning up the canal and limiting the damage it inflicted on the parklands below, the Grand Ditch itself nonetheless remained trouble-prone. A portion of the ditch’s bank experienced a “large slide” because of “heavy spring run off in 1970,” Johnnie Holzwarth claimed.²⁸ Eight years later, Park rangers received a telephone call informing them that “the Grand Ditch located above the Holzworth [sic] Ranch on the west side

²⁷ Theodore R. Thompson to William E. Hinshall, n.d. [1970], W-93, *ibid.*

²⁸ John Holzwarth to Howard Cliff, n.d. [received Oct. 1, 1970], W-92, *ibid.*

of the park, had blown out and that a large stream of water, boulders, and mud cascaded down the mountainside in the vicinity of the Holzworth Ranch.”²⁹

Such breaches in the 1970s and thereafter, though, paled in comparison to the disaster that unfolded on May 30, 2003 at a spot above Lulu City, roughly 2.4 miles from La Poudre Pass on the ditch route. With winter’s snow melting rapidly, chunks of ice and other debris effectively dammed the ditch. Water backed up, eventually breaching the bank of the canal and surging through the gap. The breach scoured a steep gully through an “old growth lodgepole and spruce-fir forest.” By the time the breach had been repaired, the gully had grown to roughly 167 feet across and 60 feet deep, and the raging waters had carried between 48,000 and 60,000 cubic yards of rock and mud downslope and into the Upper Colorado. At least 22 acres of the valley floor received direct damage in consequence, and 1.5 miles of the river was afflicted as rising waters carried large quantities of sediment and rock over the Colorado’s banks and onto its floodplain.³⁰ The NPS filed suit against the WSSC, invoking both the Park System Resource Protection Act, and a 1907 right-of-way agreement signed between the WSSC and the Forest Service (which the NPS had effectively inherited as part of the Never Summer annexation compromise); in May, 2008, the Service and the ditch company reached an out-of-court settlement. The WSSC agreed to pay RMNP \$9 million, “the largest natural resource damages payment in the history of the Park System Resource Protection Act.”³¹

The NPS is applying the settlement to an extensive restoration project; the planning, public comment, and approval process for the Grand Ditch Breach Restoration Project continues as of this writing. Tensions and conflicts between the ditch company and the Park may have

²⁹ Message record, June 16, 1978, W-81, *ibid*.

³⁰ http://www.nps.gov/romo/parkmgmt/grand_ditch_breach_rest_eis.htm;
http://www.nps.gov/romo/parknews/grand_river_ditch.htm

³¹ http://www.nps.gov/romo/parknews/pr_wssc_justice.htm

eased somewhat in consequence, but the root conflict between the two entities seems unlikely to evaporate. Demand for water on Colorado's northern piedmont continues to skyrocket as developers eagerly subdivide former farmlands to build the suburbs of tomorrow. Even if the WSSC possessed the will and the financial resources to undertake a sweeping program of aesthetic and ecological mitigation, the Grand Ditch's visual impact would almost certainly remain. As for the Park Service, its commitment to ecological protection shows little sign of wavering, while the recent designation of more than 95% of Rocky Mountain National Park as federally-designated wilderness almost certainly guarantees that Park officials will join many Rocky visitors in perceiving the Grand Ditch as a regrettable anomaly—a fifteen-mile-long gash inscribing utilitarian values upon a scenic, even sacred landscape.

A New Paradigm of Fisheries Management

The Grand Ditch has hardly figured as the only body of water requiring attention from Rocky Mountain National Park managers. The natural streams and lakes of the Kawuneeche chiefly concerned Park officials because of the habitat they provided for fish. From the Never Summer addition to the present day, the Kawuneeche's fisheries have presented a shifting set of challenges. Prior the 1930s, the Park basically followed the lead of local elites, state fisheries experts, and tourists, all of whom essentially viewed fish as highly malleable—a resource that could be readily manipulated to yield the desired outcome of plentiful supplies of fish capable of giving anglers the sport they desired. The Park Service's slow turn toward a more ecological paradigm of fisheries management discredited this earlier approach. Yet undoing the widespread stocking of exotic species in the valley's waters and turning back the clock to a more pristine era would prove difficult, if not impossible. Some of the processes set in motion in the late

nineteenth and early twentieth centuries, especially the hybridization of previously isolated trout populations, may not be reversible. Meanwhile, other threats to the Kawuneeche's aquatic environments such as the ongoing diversion of Grand Ditch water and the collapse of beaver populations threaten to undermine the elaborate effort to restore Colorado River cutthroat trout to their rightful place in the valley's streams and lakes.

In Rocky's early years, the Park Service generally played a subordinate role in fisheries management; this led the agency, as we have seen, to perpetuate a fisheries management paradigm oriented toward providing ample supplies of trout for anglers.³² Following the lead of Colorado's Game and Fish Commission and such federal agencies as the Bureau of Biological Survey and Bureau of Fisheries, the Park sought first and foremost to provide good fishing conditions for visitors. Toward this end, the NPS encouraged other agencies to continue the existing practice of stocking the waters of the Colorado and its tributaries, as well as some high-country lakes, with two exotic species—rainbow trout and brook trout—as well as with so-called “native trout,” which managers generally defined as any variety of cutthroat trout, not necessarily the Colorado River cutthroat subspecies that was the only variety of trout known to inhabit the Kawuneeche prior to white settlement.³³

³² In his first annual report, RMNP's initial superintendent noted: “It has been the custom of the State Game and Fish Commissioner to stock certain lakes and streams in this locality with trout, and this has been continued since the National Park has been created.” Quoted in Kennedy, “Outline of the History of Fisheries Management,” 2. This local policy was in accord with policy at the federal level. Richard Sellars, *Preserving Nature in the National Parks: A History* (New Haven, Ct.: Yale University Press, 1997).

³³ Frank, “Marketing the Mountains,” 216-217; Kennedy, “Outline of the History of Fisheries Management,” 1-2.



Fishing party in the East Inlet, ca. 1930. These gentlemen, proudly displaying the day's abundant catch, epitomized the sport-fisherman's mindset: to catch a lot of fish, and to enjoy as much sport in the process. Such apparent plenty, though, actually reflected the impact of stocking efforts, encouraged by the NPS but often conducted by others. This put-and-catch approach to fisheries management, however, would come under fire starting in the 1930s, though it was only in the 1960s that Rocky would embark on a more ecologically informed policy. John C. Preston photograph, Sept., 1936, catalog #12-E, negative #2457, album #4006, RMNP Photo Collection.

Growing awareness that stocking exotics was harming native fish, combined with the ascendancy of scientific ecology within the NPS around 1930, led Rocky officials to pull back from the indiscriminate stocking of non-native fish they had previously practiced. The first step in this direction came in a 1929 communiqué from NPS Director Horace Albright ordering park superintendents to exercise greater caution when stocking previously fishless lakes and streams. Albright wanted the superintendents to leave at least a few of these bodies of water alone at each park to provide a baseline for future scientific research; he also directed them to halt the

introduction of additional fish species to waters in which one or two species (whether native or introduced) had already established breeding populations.³⁴

In 1936, the Service took another step toward a more enlightened fisheries policy, this time in a document worth quoting at length:

To bring all fish cultural activities in the national parks and monuments within the general policies applying to all other forms of animal life, the following policy affecting fish planting and distribution shall be followed:

- * No introductions of exotic species of fish shall be made in national park or monument waters now containing only native species.
- * In waters where native and exotic species now exist, the native species shall be definitely encouraged.
- * In waters where exotic species are best suited to the environment and have proven of higher value for fishing purposes than native species, plantings of exotics may be continued with the approval of the Director and the superintendent of the park in which such waters are located.
- * It is the definite purpose of this policy to prohibit the wider distribution of exotic species of fish within the national parks and monuments, and to encourage a thorough study of the various park waters to the end that a more definite policy of fish planting may be reached.
- * In waters where the introduction of exotic species threatens extinction of native species in an entire national park or monument area, such plantings should be discontinued and every effort made to restore the native species to its normal

³⁴ Horace M. Albright, memorandum to all park superintendents, Aug. 6, 1929, paraphrased in *ibid.*, 3.

status.

* The number of any species of native non-game fish should not be reduced even where such reduction may be in the interest of better fishing.

* All forms of artificial stream improvement which would change natural conditions should be avoided, but the restoration of streams or lakes to their natural condition is permissible where thorough investigation indicates the desirability of such action.

* There should be no effort to introduce exotic fish or other exotic aquatic life for the purpose of increasing the supply of fish food.

* In cases where a lake or stream is of greater value without the presence of fishermen, there should be no stocking of such waters.

* In national parks and monuments where there still remain certain lakes which do not contain fish, permission of the Director must be secured before stocking.³⁵

Acting NPS Director A. E. Demaray explained and elaborated upon this new policy a few weeks later. “Scientific study,” he believed, “has tended to prove that” stocking nonnative fish “disturb[s] the system and order carefully worked out during long periods of time by nature.”³⁶ Seventy-five years later, scientists and resource managers are still struggling to restore “the system and order carefully worked out” over the preceding eons to the Kawuneeche’s streams and lakes.

³⁵ Arno B. Cammerer, Office Order No. 323 (The Fish Policy). April 13, 1936, quoted in Kennedy, “Outline of the History of Fisheries Management,” 4.

³⁶ A. E. Demaray, “Information Bulletin, Rocky Mountain National Park,” May 26, 1936, quoted in Frank, “Marketing the Mountains,” 224.

These policies initiated in 1936 represented a positive change from past policies that facilitated visitor enjoyment but failed to advance the preservationist side of the mission with which Congress charged RMNP and the NPS. Yet Rocky officials proved slow to implement the new directives. In 1938, the Park turned to stocking only so-called “native” trout. But because of a lack of scientific understanding regarding the sub-speciation of cutthroat trout, stocking programs at Rocky propagated few native Colorado River cutthroats, and many Yellowstone cutthroats.³⁷ Civilian Conservation Corps crews built fish rearing ponds in the East Inlet of Grand Lake and carried ostensibly “native” trout hatchlings to streams and lakes throughout the Park’s west side.

Such efforts to “restore” Park fisheries only produced further disorder. In 1944 and 1946, respectively, NPS researcher Stillman Dixon and RMNP Superintendent David Canfield expressed concern about the use of Yellowstone cutthroat in Rocky. But official awareness of the problem failed to produce any substantive shift in practice. Because of the closure of the Grand Lake hatchery in 1940, the Park could find no source capable of supplying the large numbers of truly “native” Colorado River cutthroats it desired.³⁸ Thus Yellowstone cutthroat fry continued to enter the Kawuneeche’s waters by the bucketful.

NPS Regional Director Howard Baker, in a speech before the Izaak Walton League of Sioux City, Iowa in 1957, expressed the Service’s best intentions regarding fisheries: “Most of our management efforts today are moving in the direction of undoing our mistakes and restoring the abundant powers of Nature to the throne.”³⁹ Baker’s characterization indeed reflected one dimension of the new reality emerging at Rocky; in 1954, Park officials had begun for the first

³⁷ Ibid., 226-8; Kennedy, “Outline of the History of Fisheries Management,” 4.

³⁸ Ibid., 4-5. Valid diagnostic methods for distinguishing between subspecies of cutthroat trout emerged only in the early 1970s. Ibid., 6.

³⁹ Howard Baker address to the Izaak Walton League, Sioux City Iowa, Feb. 21, 1957, quoted in Frank, “Marketing the Mountains,” 235.

time in decades to stock Rocky's waters with cutthroats reared in Colorado (it is not clear what subspecies these fish belonged to, but they were not Yellowstone cutthroats); fisheries managers also launched their first concerted restoration program, which focused on Greenback cutthroat populations in Forest Canyon and Fay Lakes, both on the east side.⁴⁰ Despite these signs of progress, though, Baker (and presumably many of his colleagues) remained committed to keeping anglers and the business owners who depended upon them happy: by "restoring . . . Nature to the throne," Baker argued, the Park Service could best assure "a continuing heritage of wildlife for aesthetic enjoyment or for the creel or bag."⁴¹

At Rocky Mountain as at other units, the Park Service moved slowly toward elevating ecological restoration vis-à-vis "aesthetic enjoyment" and "the creel or bag." A 1962 "Inter-Agency Lake Survey" produced by R. A. Azevedo and O. L. Wallis reported that several alpine and subalpine lakes on Rocky's west side boasted large populations of brook trout, but few or no cutthroats. Azevedo and Wallis sought to put a positive gloss on their problematic findings by championing "the objective of providing for recreational angling while protecting basic Park fishery resources and other natural features."⁴² Rocky's 1965 "Long Range Fishery Management Plan," authored by Neal R. Guse and Wallis, expressed similar assumptions: "Fishery resources in RMNP are significant for the recreational opportunities they provide anglers to fish for wild trout in the midst of the park's scenic surroundings."⁴³ The 1965 plan proceeded to classify every lake in the park according to a three-tiered scheme: lakes managed

⁴⁰ Kennedy, "Outline of the History of Fisheries Management," 5.

⁴¹ Quoted in Frank, "Marketing the Mountains," 235.

⁴² R.A. Azevedo and O.L. Wallis, *Inter-Agency Lake Surveys and Trout Investigations, Rocky Mountain National Park, 1961, Including Ten Year Stocking Schedule* (Washington, D.C.: U.S. Department of the Interior, National Park Service, 1961).

⁴³ N. Guse and O.L. Wallis, *Long Range Fishery Management Plan, Rocky Mountain National Park, 1965-1974* (Estes Park, Colo.: U.S. Department of the Interior, National Park Service, 1965); Kennedy, "Outline of the History of Fisheries Management," 5-6.

for sport fishing that required ongoing stocking; lakes managed for sport fishing but possessing self-sustaining fish populations; and lakes not managed for fishing purposes. The final classification illustrated an incipient change then underway: while the Service remained primarily concerned with the first two categories because they provided recreational opportunities that visitors desired, Park biologists and others were also beginning to think that not every stretch of water within RMNP needed to be managed for the benefit of anglers.⁴⁴

Acknowledging non-recreational benefits to Park fisheries represented a significant step toward a more ecologically-informed model of fisheries management. Yet the 1965 fisheries plan also contained a troubling admission: “Modification of the aquatic environment and fish populations,” Guse and Wallis warned, “has been so extensive that it is now difficult to determine the original composition and distribution of native fishes in the park.”⁴⁵ In 1957, Howard Baker had spoken quite casually of “restoring ... Nature to the throne,” and in 1936 A. E. Demeray had implied that NPS policies could restore “the system and order carefully worked out during long periods of time by nature.” By 1965, however, Guse and Wallis found it impossible to express much confidence regarding scientists’ ability to figure out which fish had lived where prior to white settlement, let alone devise feasible strategies for recreating this lost world.

The realization that there was no easy solution for restoring Park waters led fisheries managers to grope toward what fisheries expert Chris Kennedy of the U.S. Fish and Wildlife Service calls a “major shift in fisheries management.” By the late 1960s, satisfying sport anglers no longer served as the overriding goal of Park policy. Growing visitation, after all, bore a share of responsibility for depleting the park’s fisheries. In the early 1960s, the Park Service had

⁴⁴ Ibid.; Kennedy, “Outline of the History of Fisheries Management,” 5-6.

⁴⁵ Guse and Wallis, *Long Range Fishery Management Plan, Rocky Mountain National Park*, 1; Kennedy, “Outline of the History of Fisheries Management,” 5-6.

begun trying to persuade anglers to voluntarily adopt a catch-and-release policy for native trout, and a catch-and-kill policy intended to reduce populations of brook trout and other exotics; these practices were formalized in the park's fishing regulations in 1982.⁴⁶ Park managers had also tried to displace brookies and rainbows through intensive stocking of cutthroats, but these efforts had failed to bring about the desired results.

And so in 1969, the Park declared a moratorium on the stocking of exotic fish, including Yellowstone cutthroats.⁴⁷ Halting propagation efforts initially served a practical purpose: it enabled biologists to undertake needed research "to determine the biological capabilities of park waters to support trout," as well as to limit the damage fishermen inflicted on the sensitive shorelines of subalpine and alpine lakes. But the moratorium also dovetailed with the larger paradigm of "natural regulation" that guided NPS wildlife policies in the late 1960s and '70s. The ban on stocking at Rocky became permanent in 1976.⁴⁸

Progress toward fisheries restoration, though, remained agonizingly slow. The 1976 aquatic resources management and action report authored by Roger Contor glumly assessed the enduring legacies of past policies: "[I]n park streams," non-native trout, "primarily brook trout, fill the normal biological carrying capacities of the waters." In high-country lakes, cutthroat trout competed more effectively. Yet decades of stocking in Rocky had introduced Yellowstone cutthroats throughout the Park. Only by eliminating the fish brought into the Kawuneeche over

⁴⁶ Frank, "Marketing the Mountains," 248.

⁴⁷ Kennedy, "Outline of the History of Fisheries Management," 6. As historian Jerritt Frank points out, "the rise of ecological thinking within the NPS" by the late 1960s "had given its managers the sense that their previous policy was flawed, but did not *de facto* give them the scientific and technical knowledge needed to adequately adjust it." "Marketing the Mountains," 230.

⁴⁸ Kennedy, "Outline of the History of Fisheries Management," 6.

the previous decades (as well as their hybridized offspring) could fisheries managers free up ecological niches for reintroduced Colorado River cutthroat trout.⁴⁹

In response to the problems Contor articulated, the Park Service launched a new plan in 1979 to restore Colorado River cutthroat populations to the Kawuneeche.⁵⁰ Putting this plan into practice involved two main steps: 1) using antimycin and other toxins to kill off existing fish populations; and 2) transplanting Colorado River cutthroat broodstock from hatcheries or wild habitat into the valley's waters. The first restoration effort on Rocky's west side began with the poisoning of "non-native cutthroats and cutthroat x rainbow hybrids" in Timber Lake and Timber Creek. Having eliminated undesirable fish, the Park Service proceeded to introduce 1,080 "fry obtained from a pure strain of Colorado River cutthroat from Clinton Gulch Reservoir," a refuge of ostensibly non-hybridized "native" trout on property owned by the Climax Mining Company outside of Leadville.⁵¹

An even more ambitious and unlikely restoration effort brought Colorado River cutthroat trout to the Kawuneeche from the Williamson Lakes in the southern Sierra Nevada, where the subspecies had been transplanted decades earlier. This operation depended on high-speed aerial transportation technologies to get the fish to Colorado with minimal mortality. A helicopter took the cutthroats from the Williamson Lakes to an airfield. An airplane then hauled the fish to

⁴⁹ Roger J. Contor, "Aquatic Resources Management: Management Action Description" ([Estes Park?]: U.S. Department of the Interior, National Park Service, Rocky Mountain National Park, 1976), 1-2; United States Fish and Wildlife Service, "Rocky Mountain National Park Fisheries Management Report, 1979," (Lakewood, Colo.: Colorado Fisheries Assistance Office, 1979).

⁵⁰ Jerritt James Frank, "Marketing the Mountains: An Environmental History of Tourism in Rocky Mountain National Park" (Ph.D. diss., University of Kansas, 2008), 242-246; Colorado River Cutthroat Coordination Team, *Conservation Strategy for Colorado River Cutthroat Trout* (*Oncorhynchus clarkii pleuriticus*) *in the States of Colorado, Utah, and Wyoming* (Fort Collins: Colorado Division of Wildlife, 2006), 10.

⁵¹ United States Fish and Wildlife Service. "Rocky Mountain National Park Fisheries Management Report, 1979," 9, 11; Bruce D. Rosenlund, Chris Kennedy and K. Czarnowski, *Fisheries and Aquatic Management: Rocky Mountain National Park* (Lakewood and Estes Park, Colo.: U.S. Department of the Interior, Fish and Wildlife Service, Colorado Fish and Wildlife Assistant Office, and National Park Service, Rocky Mountain National Park, 2001), 153.

Colorado, where another helicopter ferried the fish from an airfield to Bench and Ptarmigan Lakes.⁵²

Restoring Colorado River cutthroat trout required extreme measures, and thus cost a lot of money. Funding cuts forced fisheries experts to scale back reintroduction efforts between 1988 and 1997. Despite the new mood of austerity, fisheries scientists nonetheless made some progress during these years. Most notably, they located a population of Colorado River cutthroats in Lake Nanita they believed to be genetically pure, then established a hatchery to propagate broodstock from this population.⁵³

Cooperative agreements signed in the late 1990s by several state and federal agencies provided an effective way around funding limitations, since they enabled a variety of entities to pool resources, and thus accomplish more with less money. Restoration efforts accelerated in consequence throughout the Colorado River Basin.⁵⁴ Thanks to these initiatives and their precursors, Colorado River cutthroat have reclaimed some of their former habitat within Rocky Mountain National Park; even so, in 2005 the subspecies still occupied only about 10% of its historic habitat in the Kawuneeche Valley, including ten populations that seem to have persisted more or less continuously since the nineteenth century, and four restored populations.⁵⁵

⁵² Kennedy, "Outline of the History of Fisheries Management," 6-7.

⁵³ *Ibid.*, 7.

⁵⁴ The key initiatives in this regard has been the Colorado River Cutthroat Trout Task Force and the Colorado River Cutthroat Trout Coordinating Team. See, for instance, CRCT Task Force, *Conservation Agreement and Strategy for Colorado River Cutthroat Trout (Oncorhynchus clarki pleuriticus) in the States of Colorado, Utah, and Wyoming* (Fort Collins: Colorado Division of Wildlife, 2001); CRCT Coordination Team, *Conservation Strategy for Colorado River Cutthroat Trout*.

⁵⁵ Christine L. Hirsch, Shannon E. Albeke, and Thomas P. Nesler, "Range-Wide Status of Colorado River Cutthroat Trout (*Oncorhynchus clarkii pleuriticus*)," (Fort Collins: Colorado Division of Wildlife, 2005), 14. In the headwaters GMU, 14 populations had been re-established, though it's not clear how many of these lay within RMNP. Rosenlund, Kennedy, and Czarnowski, *Fisheries and Aquatic Management*, 139.

Efforts to restore native trout, though, have recently suffered a serious setback. Not only do Colorado River cutthroats remain absent from 90% of the waters they once called home, but some experts now question whether the cutthroats that presently inhabit stretches of the Upper Colorado River watershed are, in fact, Colorado River cutthroat trout. Recent research from two reintroduction sites, Bench Lake and Ptarmigan Creek, show evidence of hybridization with Yellowstone cutthroat trout among these populations, probably because the chemicals used to prepare these waters for Colorado River cutthroats failed to kill all Yellowstone cutthroats present in these waters.⁵⁶ Restoration efforts, though seldom easy, have nonetheless managed to eliminate exotic fish such as brook trout from some waters within the park. They have also succeeded at returning pure Colorado River cutthroats to Timber Creek and Timber Lake.

“Restoring” the Kawuneeche

Park Service efforts to restore the Kawuneeche to a more “natural” state extended from fisheries and the Grand Ditch to the *terra firma* of the valley floor. The Never Summer annexation of 1930 failed to satisfy the Park Service. Congress gave the agency greater control over the upper end of the valley, particularly much of the crucial Trail Ridge Road watershed. But the NPS remained uncomfortable with conditions elsewhere in the Kawuneeche. The presence of private property in the form of homesteads and other lands that had passed into private hands during the homesteading era raised fears that commercial development might creep up the valley from Grand Lake. Gas stations and motels, tacky cottages and *faux* Indian trading posts and all the other accouterments of mass tourism, officials believed, posed a threat to the “national park values” the NPS had invoked in the Never Summer addition campaign of 1930.

⁵⁶ Chris Kennedy interview with author, Nov. 24, 2010, transcript in appendix and in RMNP Archives.

The presence of private landowners jeopardized the Park Service’s ability to manage tourists, but the agency was also concerned about other mobile entities, particularly the wildlife populations that had inspired Enos Mills to campaign for a national park in the first place. Service officials sought to neutralize the threat it believed private landholdings posed to Rocky Mountain through a tactic that was never a realistic option in their ongoing struggles against the Grand Ditch “scar”: buying out private landowners and incorporating their parcels into the National Park.



The Phantom Valley Trading Post epitomized the kind of development on private lands that the National Park Service was intent on eliminating from Rocky Mountain. The post sold gas, goods, western wear, jewelry, and much else. Ernest Rostel photograph, 1941, catalog #10-F-8, negative #678, RMNP Photo Collection.

From 1930 to the present day, the NPS proceeded to buy out most other landowners in the Kawuneeche Valley. Money for land acquisition often proved difficult for the Service to wrest from Congress, and many owners proved reluctant to sell. Time, however, seemed to be on the Park’s side. Piece by piece, the NPS bought up private parcels on the valley floor. Many

of these transactions involved so-called “inholdings”—enclaves of private land encircled by the Park. A few purchases, though, resulted in further extensions of Park boundaries in the valley—most notably the purchase of the Holzwarth family’s lands in the late 1960s and early ‘70s.

Once the NPS acquired former homesteads, cattle ranches, guest ranches, and second homes, it faced the difficult choice of deciding how to manage these lands. In particular, the agency grappled with four primary imperatives: 1) a desire to restore the Kawuneeche to its “natural” or “pristine” condition; 2) an obligation to preserve the valley’s human history; 3) a need to provide visitors with an enjoyable and safe experience; and 4) a duty to administer the Park in a cost-effective manner. These imperatives sometimes dovetailed quite easily, but in other cases, they pointed in contradictory and conflicting directions.

From the Never Summer campaign onward, NPS officials justified land acquisition and boundary extension by highlighting the natural and protective qualities of Kawuneeche: the valley, they claimed, was pristine, and it guarded a crucial approach to RMNP. Yet homesteaders and dude-ranch owners had left indelible marks upon the valley, ranging from homestead cabins and barns to irrigation ditches and exotic hay meadows. The gap between the vision of the Kawuneeche that the NPS trumpeted and the material reality that confronted the Service on the ground led the agency to embark upon a wide-ranging campaign to “restore” most of the valley. Yet this effort was hampered by the Service’s lack of clarity regarding a crucial question: To what point in time should the agency endeavor to turn back the clock?

When considering “natural” resources such as fish, the agency tended to set its baseline of desired conditions to a vaguely defined “pre-settlement” era. The Service usually conceptualized the pre-settlement landscape as a place devoid of any meaningful human presence, thus ignoring the actual history of Indian-environment relationships formed by the

Utes and their predecessors over more than ten millennia of Native American inhabitation of the Kawuneeche. When interpreting the valley's "historic" resources, the NPS initially pursued a distinct but related impulse. It emphasized the valley's history of homesteading in a manner that sought to obscure the ongoing significance of dude ranching and other forms of tourism in the area. Only after the NPS had put the last of the Kawuneeche's dude ranches out of business would the Service begin to do justice to the intertwined histories of homesteading, ranching, and tourism in the valley's history.

The problems caused by fuzzy baselines, meanwhile, were exacerbated by other powerful dynamics. Whatever baseline the NPS chose, and whichever past it sought to restore, non-human nature was never putty in the agency's hands. Instead, elements of the natural world retained considerable power to pursue their own courses of action. This reality further complicated the Park Service's treatment of private lands and its interpretation of the histories that literally took place on these tracts.

As we have seen, the creation of Rocky Mountain National Park in 1915 helped to generate a boom in dude ranching and other forms of tourism in the Kawuneeche. Though settlers and ranch operators engaged in only limited conflict with the Park Service in the 1910s and '20s, relationships between the valley's land-owners and the National Park Service grew messier thereafter.

From the moment in the early 1900s when Squeaky Bob Wheeler accommodated his first tourist at the future Hotel de Hardscrabble, Kawuneeche settlers embraced the possibilities tourism presented. Thanks to tourist dollars, the owners of dude ranches and guest ranches were able at least to get by. The Holzwarth family's Trout Lodge and Neversummer Ranch, though

hardly a representative example of valley tourist operations, nonetheless offers the best-documented, longest-lived, and most colorful case study of Kawuneeche Valley dude ranching.

As of 1930, at the dawn of the Great Depression, the Holzwarth place was already assuming the look and feel of the typical Western dude ranch. The owner-operated resort offered horseback riding, fishing, hiking, hunting, ranch work, and a range of outdoor activities, as well as relaxation and western flavor. Though the Holzwarths allowed camping on a portion of their land, and eventually reserved some cabins for people who wished to do their own housekeeping, the vast majority of visitors to the ranch stayed on the American Plan, meaning that the home cooking the family served up was part of the rate visitors paid. A hospitable, informal atmosphere served as the cornerstone of visitors' experience.⁵⁷ It was a recipe for rapid success. Before the 1920s had ended, "On a holiday weekend in the summer," writes Kathleen Means, "it was not at all unusual to have 100 people sleeping around the ranch, sprawled on the ground or huddled under trees."⁵⁸

The unstable economic climate of the 1930s hurt tourism throughout the West. Johnnie Holzwarth responded by circulating the first of many brochures marketing the Neversummer Ranch to potential visitors. Though a decline in paying guests reduced the ranch's income, the Holzwarths' proclivity for enterprise buffered the blow. The family's hay business provided a

⁵⁷ I draw these criteria from Lawrence Borne, *Dude Ranching: A Complete History* (Albuquerque: University of New Mexico Press, 1983), 4. In addition to the criteria listed, an official dude ranch according to Borne also had to be located in the western United States, possess a location and outdoor activities that avoided crowded areas, and reservations were a must while transient trade was an uncommon business practice. The Holzwarth establishment aligned with every point of consideration. Borne was a guest and worked as a wrangler on the Holzwarth's ranch. See also Lawrence Borne, "Dude Ranching in the Rockies," *Montana: The Magazine of Western History* 38 (Summer, 1988), 14-27 and Jim Weir, "Dude and Guest Ranches in Grand County: Who, What, When, and Where," *Grand County Historical Association Journal* 6 (June 1986), 3-31.

⁵⁸ Kathleen Means, comp., "The Holzwarth Family: Holzwarth Trout Lodge, Holzwarth Ranch, Neversummer Ranch, 1917-1974, RMNP," May, 2001, typescript report from Fleshuts Cabin, Kawuneeche Valley, RMNP, 7.

relatively stable source of profit, which Johnnie “always reinvested in improvements to the ranch.”⁵⁹ Johnnie continued to set trap-lines, run his saw mill, and cut ice on Grand Lake throughout the hard times.⁶⁰ Johnnie’s sister, Julia, provided even greater financial support to the dude ranch. After learning bookkeeping and accounting at Barnes School of Business in Denver, she worked a succession of jobs before rapidly ascending the ranks at Hilb Company, a Denver wholesaler; Julia was doing so well that in 1928, she had loaned her family \$13,500 for the construction of the dude ranch.⁶¹

Not long after John Holzwarth, Sr., died in the Christmas season of 1932, Julia paid for Mama Holzwarth to return to Germany for an extended visit.⁶² When Mama came back, she found that Johnnie had taken steps to reduce her workload: she would continue to serve up German and American delicacies at the ranch house, but guests staying at the cabins the family had built over the course of the previous years would now have to do their own housekeeping and cooking. The linens and other laundry which Mama had always washed herself with a copper tub, washboard, and hand-operated washing machine, then hung up to dry on lines strung between trees outside the back door of her cabin, was now transported to Denver for washing. The Holzwarths also began around this time to give guests the option of chopping their own

⁵⁹ Lynn Mohn, “Raising Pansies, Radishes, and Hell,” *National Parks and Conservation Magazine* 49 (June 1975), 12. Exact details of the success of the hay business are elusive, but in “Ranch Owner Challenges Testimony,” *Denver Post*, March 28, 1965, Johnnie mentioned that chinchilla ranchers and race horse owners sought the high-altitude hay, proving there was at least an outside, niche market for it. Johnnie noted that by the end of the ranching days the hay fields produced roughly 12,000 bales annually; “Conservationist Can ‘Take it With Him’,” *Denver Post*, March 17, 1974,.

⁶⁰ Means, comp., “Holzwarth Family,” 22-23.

⁶¹ *Ibid.*, 17.

⁶² *Ibid.*, 17.

wood; that “many” visitors reportedly “loved to do it” shows that a time-honored form of frontier labor was fast on its way to becoming a form of rugged but nostalgic play.⁶³

The U.S. entry into World War II brought rationing of gasoline, rubber, metal, and other necessities of auto tourism, as well as tightening labor markets and an intense, almost all-consuming focus on the war that made vacations seem unwarranted and frivolous. Given the Holzwarths’ difficulty in finding wranglers and other workers during the first half of the 1940s, the labor the few remaining visitors contributed became critical to the Neversummer Ranch’s operation.⁶⁴ Johnnie and Julia both worked hard in their different ways to keep the ranch running. Johnnie, never afraid to take risks, borrowed \$1,400 “to have myself a couple hundred head of cattle and ... to put up [the] hay” he needed to keep them fed throughout the winter.⁶⁵ Fred McLaren, then Rocky’s only ranger in the Kawuneeche and a long-time associate of Johnnie’s, expressed skepticism about the scheme in one of his monthly reports to the Park superintendent: “I can not believe that this will be a profitable venture owing to the long severe winters along the upper Colorado River Valley.”⁶⁶ Unfortunately for the Holzwarths, McLaren was right. Johnnie, a stubborn and proud man, took a while to come to arrive at the same conclusion. He got the family back out of the cattle ranching business, with Julia undoubtedly helping to cushion the financial blow of this ill-fated venture.

Allied victory—announced in the case of V-J day by a cowboy who galloped up to the Neversummer Ranch to deliver the good news—ushered in renewed prosperity for the Holzwarths. A war-weary public returned to dude ranches in swarms. The consumer demand

⁶³ Ibid., 12-17, quote on 16. For more on work, play, and nature, see Richard White, “Are You an Environmentalist or Do You Work for a Living?: Work and Nature,” in William Cronon, ed., *Uncommon Ground: Rethinking the Human Place in Nature* (New York: Norton, 1995), 171-85.

⁶⁴ Borne, *Dude Ranching*, 176.

⁶⁵ Means, comp., “Holzwarth Family,” p. 27.

⁶⁶ RMR, Nov., 1942, folder: “A2827 Reports, Monthly (1942)”, temp. box 68.

for rest, relaxation, and rugged play that had pent up during the war combined with rapidly rising incomes, growing access to automobiles, improved roads into the Colorado high country, and skyrocketing population growth in Colorado's Front Range to lift the Neversummer Ranch to the pinnacle of its popularity.⁶⁷ Johnnie, who had spent many a winter evening reading Zane Grey novels with his father "by kerosene lamp," well understood the expectations that led his guests to seek out a dude-ranch vacation.⁶⁸ Visitors to the Kawuneeche had always come to play cowboy; in the post-war era, though, the Holzwarths grew even more adept at catering to their visitors' desire for an authentic experience that dovetailed perfectly with the mythic West post-war Americans eagerly consumed through books, magazines, radio shows, films, and, by the 1950s, television programs.⁶⁹ Holzwarth introduced Sunday rodeos and "starlit cookouts around crackling fires" to the Neversummer's existing offerings of horseback rides, fishing outings, yarn spinnings, and hikes.⁷⁰ To bring in more visitors, and to keep them engaged in a wider range of authentic pursuits during the course of their stay, Johnnie purchased another 300 acres of land in 1954.⁷¹

⁶⁷ For context, see William P. Philpott, "Consuming Colorado: Landscapes, Leisure, and the Tourist Way of Life" (Ph.D. diss., University of Wisconsin-Madison, 2002).

⁶⁸ Means, "Holzwarth Family," 8.

⁶⁹ Robert G. Athearn, *The Mythic West in the Twentieth-Century America* (Lawrence: University Press of Kansas, 1986).

⁷⁰ Mohn, "Raising Pansies, Radishes, and Hell!," 12.

⁷¹ *Ibid.*, 12.



Entrance to the Holzwarth's Neversummer Ranch, 1959. This is the sight that would have greeted automobile travelers journeying to the Holzwarth's dude ranch from Trail Ridge Road. The sign advertises "Cottages," "Main Lodge," "Pack Trips," and the "American Plan"—all important features of the dude ranch experience. The Grand Ditch is visible cutting across the Never Summers just above the ranch house. Photographer unknown, 1959.

Other residents of the Kawuneeche Valley, meanwhile, had followed their own paths into the tourist trade between the 1920s and 1950s. A 1946 map produced by the Grand Lake Chamber of Commerce showed the Sun Valley Ranch on the southern edge of the valley, on land Ed DeWitt had homesteaded, as well as a string of properties along Trail Ridge Road: from south to north, the Onahu Ranch, Green Mountain Ranch on land homesteaded by Charles Hertel, the Kawuneeche Ranch on Al House's old homestead, the Pontiac Lodge, the Holzwarths' Neversummer, and the Phantom Valley Ranch on Squeaky Bob Wheeler's old

property.⁷² A few landowners not shown on the map also rented out cabins or otherwise accommodated tourists. By the 1940s, most or all of the others either maintained a primary residence somewhere else (generally close to where they held jobs), or had the means to live in the valley without drawing their sustenance or primary income off of their land.

Sources on daily life in the Kawuneeche during the dude-ranch and second-home era are even thinner than for the mining boom and homesteading period. Yet while the social history of the valley in the mid-twentieth century seems bound to remain rather obscure, evidence on two critical dimensions of the Kawuneeche's environmental history is more plentiful: the imagined places that dude-ranch owners tried to sell to prospective visitors, and the material transformations that the intensification of dude-ranching brought to elements of the valley environment.

A form letter that Holzwarth sent out to prospective visitors in 1949 touted a visit to the Neversummer Ranch as a journey back into wild nature and America's hallowed frontier past. Beneath letterhead featuring a sketch of a cowboy riding a bucking bronco beside the name "Holzwarth Ranch" in letters meant to look as if they were formed from logs, the resort operator portrayed his property in idyllic terms:

Our location in Rocky Mountain National Park, with its scenic grandeur, is ideal, and we are experienced in anticipating the wants of our guests and knowing how to satisfy them. Dude ranching is our business—not a sideline.—we [sic] have operated successfully for thirty years.

⁷² Grand Lake Chamber of Commerce, "Ranches-Cabins Near Grand Lake," Dec. 7, 1946, copy in "Guest Ranches" binder, Fleshuts Cabin, Kawuneeche Valley, RMNP.

While easily accessible by good roads and convenient to town, yet our ranch is within a half-hour by trail of country where it is not unusual to ride for days without seeing anyone but your own party. Comfortable, modern, informal, Holzwarth Ranch is the ideal spot for your 1949 vacation, whether you want to crowd every minute with activity or prefer to relax and ‘take it easy’ in congenial surroundings in a superb mountain setting.

The West as you ‘dream it’ is a reality at Holzwarth’s!⁷³

As Holzwarth portrayed it, his family’s ranch occupied a middle landscape: close to the wilderness yet easily reached by state-of-the-art roads, it was also a meeting point between the imagined and mythic wests.

An advertisement from the Neversummer Ranch in the early 1960s hit on the same themes:

NEVERSUMMER RANCH
LOCATED IN
ROCKY MOUNTAIN NATIONAL PARK
10 Miles North of Grand Lake—37 Miles West of Estes Park
Majestic Scenery at Headwaters of Colorado River
One of Colorado’s Oldest Dude Ranches—Modern in Every Detail

⁷³ John G. Holzwarth to Daniel C. Varty, n.d. [1949], copy in “Neversummer Ranch” binder at Fleshuts Cabin, Kawneche Valley, RMNP.

Best in saddle horses for novice or experienced rider. Good equipment.

Unlimited riding with or without guides. Many excellent trails.

An ideal family ranch with true Western Hospitality. ... Quiet, secluded location.

All ranch activities. Excellent food—family style. Dairy products from ranch.

Fishing, hiking, unlimited riding, pack trips or restful relaxation. Owner
Management. Open June 15 to September 15.

Rodeo every Sunday if weather permits. Annual pack trips to opera in Central
City.⁷⁴

The mentions of “family,” ranch-grown dairy products, hiking, and the Central City opera trip suggested some changes to Holzwarth’s pitch, but the heart of Johnnie’s appeal to visitors remained the same: the dude ranch was a place where visitors could get closer to nature and play cowboy while enjoying modern comforts and enjoyable company.

Indeed, what one Holzwarth brochure aptly called “practical solid comfort in a romantic setting” proved the Neversummer’s stock-in-trade.⁷⁵ If visitors were not satisfied by “sapphire-blue Grand Lake,” “gay parties ... arranged to go over to Grand Lake Village to dance,” “Three miles of rippling trout stream,” and “All the comforts of modern hotel service together with all the fun of a dude ranch!,” then the ranch’s family appeal was sure to please them. “Ranch pets from ‘Trixie’ the pony to ‘Mamie’ the calf do their antics to the delight of youngsters,” “an

⁷⁴ Copy of advertisement, [1960-’61?], in “Neversummer Ranch” binder.

⁷⁵ “Out Among the Peaks and Pines of the Glorious Rockies,” n.d., in “Guest Ranches” binder.

equipped playground provides plenty of entertainment,” and children were guaranteed “lots of fun watching ... the activities of regular ranch life.” One set of facing pages featured the caption “Fun and Work for the Tenderfoot!” alongside photos juxtaposing images of guests performing ranch chores with Sunday night steak fries next to a crackling campfire. “Every One,” the brochure promised, “Is a Chef and a Star Performer.”⁷⁶

Other guest and dude ranches in the Kawuneeche hit upon most of the same themes that helped the Holzwarths build a large and loyal clientele. The Phantom Valley Ranch offers the best example. After Squeaky Bob Wheeler sold his homestead in 1928 after “heart trouble” forced him to move to Denver, a succession of owners invested tens of thousands of dollars in the property. None, however, managed to make a go of it.⁷⁷ Irwin Beattie finally bought the renamed Phantom Valley Ranch in 1941, and remained its owner until the National Park Service purchased it in 1960.

Beattie portrayed his acquisition of the ranch as the culmination of a boyhood fantasy; he told a newspaper reporter in 1960 that he had visited Wheeler’s Hotel de Harscrabble “when he was a little boy and traveling the park under the guidance of Enos A. Mills, the park pioneer and historian. He had stood in 1915 at the dedication of the park as a national playground. And as a boy he dreamed the dream he one day would operate a lodge in the park.”⁷⁸

Beattie reportedly came “from a long line of innkeepers,” and he was an experienced hotelier in his own right.⁷⁹ He well understood that making his dream pay, however, would require some skillful marketing. Beattie himself lacked Johnnie Holzwarth’s enthusiasm for

⁷⁶ Ibid.

⁷⁷ “R. L. Wheeler of Dude Ranch Fame Is Dead,” undated clipping from unidentified newspaper, in “Guest Ranches” binder.

⁷⁸ Pasquale Marranzino, “Gates Swing Shut,” Sept. 7, 1960, typescript copy of article for *Rocky Mountain News*, in *ibid.*

⁷⁹ Pasquale Marranzino, “All from Hotel de Hardscrabble,” 1958, typescript copy of article for *Rocky Mountain News*, in *ibid.*

horsemanship, but he nonetheless sought to sell Phantom Valley as a place “where the trails meet the sky.” Brochures advertising the ranch portrayed it using the same mix of back-to-nature, cowboy, and comfort themes that his competitors at the Neversummer Ranch used.⁸⁰ The cover of a professionally-produced eight-page color brochure for Phantom Valley, for instance, noted that “The National Park Service maintains many fine trails from the Ranch into this beautifully timbered region of magnificent views.”⁸¹ Prospective visitors who looked inside the brochure found pages decorated with visual cues--drawings of cowboys, spurs, a flintlock, a powderhorn, Indians, wagon wheels, fishing tackle, an angler, and an old-fashioned camping lantern--that linked the dude ranch to time-honored western tropes. Phantom Valley, a passage of text intoned, was “fortunately situated to use the Park’s fine highway system but enjoy an unspoiled valley almost our own. ... With National Park protection,” Beattie promised in a nod that must have gratified Rocky’s workforce, “the wildlife and hundreds of varieties of wild flowers are as plentiful as when the fur traders and the prospectors first saw this mountain paradise.”⁸² Phantom Valley represented a sort of Eden. There tourists could re-enact the mythical first encounter between the vanguard of American expansion and a supposedly unpeopled and pristine wilderness that was nonetheless easily accessible by a “fine highway system.”

Another passage of the same brochure developed both sides of this gaping contradiction between primordial purity and modern convenience, extolling Rocky Mountain National Park as “a pleasant, thrilling, almost perfect vacationland, and one of the few remaining unspoiled beauty spots in the country.” The Park’s “special charm,” in short, “[wa]s its adaptability to anyone’s conception of an ideal outdoor vacationland. ... Hundreds of thousands of visitors from every

⁸⁰ All information not otherwise attributed based on Anon., “Phantom Valley Ranch 1926-1960,” n.d., copy in *ibid.*

⁸¹ “Colorado’s Phantom Valley Guest Ranch,” n.d., copy in *ibid.*

⁸² *Ibid.*

state in the Union, and many foreign countries, come back year after year to give proof of the universal appeal of the Rocky Mountain National Park.”⁸³ Beattie portrayed Rocky, in short, not only as a blank canvas, but also as a magic one: People liked the Kawuneeche because it could match whatever expectations they brought to it.

Beattie portrayed this protean, “ideal outdoor vacation land” as as inextricably western. At Phantom Valley, his brochure informed readers, visitors could “still find the friendly informality of the true West.”⁸⁴ That “true West” had long held a reputation among Americans as a healthful place; Beattie took pains to portray a visit to his dude ranch as a salve to body as well as soul. “Majestic snow-capped heights rise abruptly from this gentle valley where relaxing in the stimulating sunshine gives one a new lease on life.” Children, Beattie reassured protective parents, could enjoy the same benefits of wholesome, healthy fun. The chief wrangler, this brochure claimed, had “been with us for years,” and “even the tiniest tots” could enjoy riding under his supervision. “There is lots of wildlife for them to enjoy,” the brochure pointed out, “but no dangerous animals and no snakes.” The brochure featured a photograph of children happily playing on the ranch’s playground, and the text noted that Beattie kept “a counselor in charge” of the playground “during the day.”⁸⁵ On the off chance that parents grew bored with family time on the ranch , they could head out for a child-free night on the town in Grand Lake: “We only employ college girls and special arrangements can be made with them for baby sitting evenings.” Baby-sitting signaled one amenity that Beattie hoped would distinguish the Phantom Valley as a slightly upper-scale operation than the Neversummer; another distinction was culinary. While the Holzwarths emphasized home cooking and ranch-raised foods, Phantom

⁸³ Ibid.

⁸⁴ Ibid.

⁸⁵ Ibid.

Valley promised a dining room in which “The best foods that the markets offer are tastefully served with full regard for healthy mountain appetites.”⁸⁶

Yet another guest ranch, the Kawuneeche, operated by the Gill family on the old House homestead, offered “new ultra-modern motel type duplex kitchenette apartments,” as well as rustic guest cottages. Like other cabin properties in and around the valley, the Kawuneeche did not provide meals, horses, or activities. Instead, Kawuneeche Ranch emphasized affordable accommodations, “warm sun-bathing days and cool sleepy nights,” “superb” views, and “excellent Mountain Trout Fishing.” As a brochure written by the Gills put it, “Yes, folks, its [sic] a home life away from home to relax and enjoy your vacation in this back to nature wonderland.”⁸⁷

Another of the valley’s smaller guest operations, the Onahu Ranch, portrayed itself in similar “back to nature” terms. It was “the place to get away from the hot and noisy city, to rest and relax and to enjoy fragrant pine scented air, bright sunshine, majestic mountains with snow capped peaks, and crystal clear lakes, rippling streams—delightful beauty on every hand.” Onahu Ranch, if its owners were to be believed, constituted “a perfect spot for an ideal Western vacation,” complete with “Western songs by singing cowboys and their guitars.”⁸⁸ As any prospective guest-ranch visitor would have known, singing cowboys *à la* Gene Autry signified

⁸⁶ The brochure did go on to note that “Fresh pasteurized milk and cream are delivered daily,” indicating that Phantom Valley may have obtained some of the fare for its tables from the Kawuneeche. Ibid..

⁸⁷ Untitled brochure for Kawuneeche Ranch, n.d., in *ibid.* Rates for the Kawuneeche were \$18-\$50 per cottage or apartment per week; for the 1960 season, by contrast, cabins at Phantom Valley were \$77 and \$84 per week, not including horses (Phantom Valley Guest Ranch, “1960 Season June 15th to September 10th: Rates and Transportation Information,” n.d., in *ibid.*)

⁸⁸ Onahu Ranch, “Onahu Ranch: The Way to a Wonderful Vacation,” n.d., in *ibid.*

wholesome fun for young and old: “Onahu is a family ranch,” and children were sure to enjoy “the midget burro, a friend of all the small fry, ready to take them on a jaunt.”⁸⁹

Yet another operation, the Green Mountain Ranch, owned by Carl and Ada Nelson from the 1930s until 1972, promised to offer “the most complete and satisfying vacation you could have!” at the “The Friendliest Ranch in the West.” A grab-bag listing of Green Mountain’s virtues included: “Scenery,” “Trail Ridge,” “Youngster’s Smiles,” “Fishing,” “Wild Life,” “Rodeos,” and “real western atmosphere on a genuine operating ranch.”⁹⁰ The Nelsons felt no need to clarify that all that kept the Green Mountain “a genuine operating ranch” was, in fact, its ability to attract paying guests to the Kawuneeche.

If the Kawuneeche Valley’s dude ranches, guest ranches, and cabins sometimes failed to fulfill the idyllic visions their promotional materials conjured, these tourist operations nonetheless enjoyed considerable popularity. Many families returned to the same property summer after summer. In recent years, the National Park Service has invited visitors to the Fleshuts Cabin, which now sits beside the parking lot from which Park visitors walk to what remains of the old Holzwarth place, to write down their recollections of the Neversummer Ranch and the Kawuneeche Valley. These short notes offer some insights into the meanings visitors made of their experiences in the valley.

One recalled of Holzwarths that a “Wonderful mixture of people came here to ride and enjoy the scenery and horses.”⁹¹ Another gushed: “We have wonderful memories of staying here.”⁹² Pamela Maughmer enthused that “Staying at Never Summer Ranch was the best time of

⁸⁹ “Supplementary Information and Rate Schedule of Onahu Ranch,” n.d., *ibid.*

⁹⁰ “Green Mountain Ranch,” n.d., *ibid.*

⁹¹ Pat Monson, n.d., in “Memories: I Remember When ...” binder, *ibid.*

⁹² Sharon (Stephens) Morgan, n.d., *ibid.*

my life!”⁹³ Still another Park visitor, who “used to come up every summer” with his family to meet with cousins, declared “this place and the pack trips we took ... by far the best times of my childhood.”⁹⁴ For Diana Dufra Quantic, two one-week stays in the summers of 1946 and 1947 were “like being in heaven for an only child who loved the West.”⁹⁵ Linda Perry called the valley “a wonderful place for a child to dream dreams and enjoy nature.”⁹⁶

As some of these recollections suggest, horseback riding exerted a particular appeal for many visitors. At Holzwarth’s for instance, former ranch-hand Lawrence Borne recalled that “guests who knew the trails and horses” could “ride all day without ranch guides in the Neversummer Mountains and in Rocky Mountain National Park.”⁹⁷ The most famous all-day ride offered by the Holzwarths was called the “Around the Horn.” It covered a circuit of eighteen miles, zig-zagging upward from the valley floor along tumbling streams tucked into evergreen forests. Ruby Lake, just below timberline, offered an ideal spot for lunch. A bracing post-meal ascent of the Never Summers provided the literal and figurative highpoint of the day. After taking in the views, riders “descended quickly into Baker Gulch, through aspen and conifers, past beaver dams, and at last back into the Kawuneeche Valley where they had begun.”⁹⁸ Such trail rides embodied the strenuous but gratifying contact with nature that stood at the heart of the dude-ranch experience.

⁹³ Pamela Maughmer, n.d., *ibid.*

⁹⁴ Stephanie Fox Wetherill, n.d., *ibid.*

⁹⁵ Diane Dufra Quantic, n.d., *ibid.*

⁹⁶ Linda Perry, n.d., *ibid.*

⁹⁷ Borne, *Dude Ranching*, 98.

⁹⁸ *Ibid.*, 100.



Guests from Holzwarths' travel along a high mountain trail, 1968. Catalog #12-6-CC-27, RMNP Photo Collection.

But trail rides also hint at another crucial dimension of mid-twentieth-century tourism in the Kawuneeche: the deep and abiding disconnect between the fantasies of environmental stasis that ranch operators sought to fulfill, and the realities of environmental change that these and other efforts to satisfy tourist longings actually required. Promotional materials reflected a purposeful lack of clarity between three discrete moments which ranch owners suggested prospective visitors might inhabit over the course of their stay in the Kawuneeche: the prelapsarian epoch signified by unspoiled and sublime wilderness, as well as by first encounters of the white kind with an unpeopled West; the erstwhile cowboy heyday that flourished before the closing of the range ushered the American frontier into a nostalgic past; and the modern era defined by consumer choice, high-speed transportation technologies, and comforts whose very

appeal rested on the departure they provided from Eden, the frontier, and other primitive times. The temporal confusion permeating dude-ranch promotions helped ranch proprietors diversify their portfolio of appeals to tourists. But none of these different ways of telling stories about people, nature, and history, of course, revealed very much about the material landscapes of the Kawuneeche Valley. Only by looking to other sources can we discern how tourism and second-home development accelerated the project of environmental transformation initiated by homesteaders and other early settlers in the valley.

Residential improvements to dude ranches and home lots constituted one driver of environmental change in and around the valley floor. For “every building that is on this ranch,” Johnnie Holzwarth boasted, “I cut the logs in the woods and saw-milled them”;⁹⁹ as the Neversummer Ranch expanded, its effects on surrounding forests consequently intensified. But dude ranchers found that providing modern comfort in the high mountains required them to put more than a roof over their guests’ heads. In the 1940s, for instance, the Holzwarths added a gravity-fed system to bring spring water from high ground southwest of the homestead through galvanized pipes to the guest cabins. And in 1946, the extension of Rural Electric Authority service to the Kawuneeche Valley enabled the Holzwarths to electrify the entire property (previously, only Mama’s cabin had any electricity, and this was provided by three DC generators running off of expensive batteries).¹⁰⁰

Keeping dude-ranch tables full with fresh poultry products caused additional environmental impacts. After attempting unsuccessfully to raise goats and rabbits, the Holzwarths began in the late 1920s to keep chickens. They got their first dozen chickens from Squeaky Bob Wheeler. Johnnie fed the birds by chopping up the carcasses of muskrats he had

⁹⁹ Quoted in Means, comp. “Holzwarth Family,” 22.

¹⁰⁰ Anon., “Historic Chronology, Holzwarths,” typescript in “Neversummer Ranch” binder.

already skinned and throwing them into the coop.¹⁰¹ Plenty of wild foods passed the Neversummer Ranch tables, too. Johnnie was a prolific hunter; he claimed to have killed up to twenty-five deer “in one year for guests,” and NPS interpreter Kathleen Means related that Johnnie “was always bragging about the numbers and kinds of animals he was taking from the park, [and] most of the time it would be out of season.”¹⁰²

Holzwarth liked to tell of the “cat and mouse game” that developed between him and Fred McLaren, who long worked as the only NPS ranger on Rocky’s west side. Some time in the 1920s, Johnnie shot a large bighorn ram in the Never Summers and hauled it down to the homestead. Hearing the sound of an incoming rider on horseback, Holzwarth hurriedly stopped butchering the sheep and ran down to greet McLaren at the Mama Cabin. After thirty minutes of shooting the breeze, the ranger got back on his horse and rode away. Once McLaren passed out of sight, Holzwarth returned to the carcass; McLaren wheeled his horse around and rode back to the Neversummer at a sprint. Holzwarth again stopped butchering and ran down to the cabin. McLaren wordlessly dismounted, walked over to Johnnie, and plucked a hair from his shoulder. “Johnnie,” the dude rancher remembered the ranger telling him, “if I didn’t know better I would swear this hair was a bighorn sheep hair.” McLaren then got back on his horse and rode off without saying another word.¹⁰³

Holzwarth recalled that he had, in fact, killed the ram outside the National Park, so McLaren lacked the authority to arrest him for poaching. The general tenor of the interaction, though, was all too common. Park rangers on the west side, after all, were connected to Park headquarters during the long winters only by telephone and radio; dude ranchers and other Kawuneeche landowners were their neighbors, and often their friends. Casual enforcement of

¹⁰¹ Means, comp., “Holzwarth Family,” 8.

¹⁰² *Ibid.*, 26.

¹⁰³ Quoted in *ibid.* 26.

Park regulations and other conservation laws consequently seem to have been the norm, not the exception.¹⁰⁴

Indeed, McLaren and other rangers frequently helped landowners with wildlife problems; when a large bull elk started snacking upon bales of hay that Holzwarth had put up in a barn for winter, then gored one of the dude-rancher's colts, McLaren joined an effort by Holzwarth, Holzwarth's son, and two owners of neighboring guest ranches to rope the elk. Once tied up, the stubborn elk refused to move, so the men started menacing it with a board. Holzwarth eventually decided that the best way to get rid of the elk was to let it go. The recalcitrant ungulate, however, returned to attack one of Holzwarth's animals. An infuriated Johnnie phoned McLaren and told him, "I'm going to kill him." McLaren replied simply "OK, I'll be up." When the ranger arrived, Holzwarth had lassoed the elk. As McLaren looked on, Holzwarth proceeded to fire steel-jacketed bullets from a 30-06 at the elk's head. The gunfire severed first one horn, then the other.¹⁰⁵ Dehorned by Johnnie's marksmanship, and evidently chastened in the process, the elk ran off. Henceforth the bull left Holzwarth, his hay, and his horses alone.

Consider next the environmental impact of horses in a tourist landscape where horses played a starring role in the cowboy performances that dude-ranch owners, employees, and guests conspired to conduct. Guests and horses effectively squeezed out most cattle, sheep, and other livestock from the Kawuneeche Valley by the 1950s. From the unrecorded moment in the 1600s when the first horse galloped into the valley right up through the 1970s, equines offered a crucial source of transportation, motive power, and entertainment for the Kawuneeche's human inhabitants. Into the 1920s, and often well beyond (Johnnie Holzwarth still used draft horses in

¹⁰⁴ See also recollections of Fred's brother, Bert McLaren, in Avis Gray, Ann Feucht, and Ryan Gray, comps., *In Their Own Spirit: Voices of Courage from a Rocky Mountain Village* (Grand Lake, Colo.: The Book Account, 2002).

¹⁰⁵ Quoted in Means, comp., "Holzwarth Family," 26-27.

the early 1970s), horses pulled the plows that tore up native meadows and thickets, the mowers that cut “tame” and “native” hay alike, and the wagons that hauled hay, milk, lumber, pelts, and other products from the Kawuneeche to Grand Lake and other markets.¹⁰⁶ Even as automobiles, trucks, and other machines powered by gasoline-burning internal combustion engines were supplanting equines as the main workhorses in the valley’s meadows and along its roads, the valley’s total horse population continued to grow.¹⁰⁷

The cause was simple: Saddle horses constituted an intrinsic part of the West that visitors expected to find in the Kawuneeche; their less visible counterparts, pack horses, played an essential role in all overnight riding trips advertised by the Neversummer Ranch, Phantom Valley Ranch, and other outfits competing for tourist business. Cows, curiously enough, eventually became almost superfluous. John Holzwarth, Jr. explained to an interviewer in 1974:

‘I got rid of my cattle in 1952,’ he recalls. ‘I went to a cattleman and said, “I don’t like my cattle.” And he said, “What position does your cattle stand?” I said, “What do you mean?” And he said, “Well, how do you take care of them?” And I said, “Oh, I take care of my dudes first, and then my sawmill, and then my cattle.” He said, “You’ve got third-rate cattle.” So I sold them.’¹⁰⁸

The Neversummer Ranch seems to have continued to keep dairy cows even after Holzwarth sold off his beef cattle. Johnnie, after all, understood that keeping his dudes happy meant giving them their pick of horses. Wisely giving up his cattle herd, he expanded his horse herd. Because the

¹⁰⁶ For a sweeping look at horses as sources of motive power during the industrial age, see Ann Norton Greene, *Horses at Work: Harnessing Power in Industrial America* (Cambridge, Mass.: Harvard University Press, 2008).

¹⁰⁷ Means, comp., “Holzwarth Family,” 21.

¹⁰⁸ Quoted in “John Holzwarth: Mr. Dude Rancher,” *Denver Post*, Dec. 1, 1974.

Neversummer could eventually accommodate up to 55 guests (with more sometimes camping on the property), and had a staff that numbered as high as 20, Johnnie needed a large herd of horses—“normally” between 75 and 100 head, though the Holzwarths “sometimes [kept] as many as 200 under their control.”¹⁰⁹ Phantom Valley, which placed less emphasis on riding, often had at least 40 horses, and animals kept by smaller guest ranches and at least some second-home owners added to the valley’s equine populations.¹¹⁰

Though the Utes may occasionally have brought as many or more horses into the Kawuneeche, the large herds that inhabited the valley during the mid-twentieth-century were unprecedented in the decades since American conquest. The Kawuneeche’s homesteaders almost never kept more than six or seven horses; keeping more alive during the valley’s long winters, after all, taxed settlers’ hay reserves (and probably required cash purchases of grain) without providing any compensating advantage. Post-World War II dude ranchers like the Holzwarths needed a new solution to the old problems posed by wintering horses in the high country. Unwittingly borrowing a page from the Utes, Johnnie Holzwarth started sending his horses to lower elevations, despite his belief that “the horses were stronger if they stayed here [in the Kawuneeche].”¹¹¹ For many years, the Holzwarths shipped most of their mounts by trailer to cheaper and more temperate winter quarters near Brighton. Around 1950, though, Gene Bassett, one of Holzwarth’s wranglers, persuaded Johnnie to pay him \$200 to drive 150 of the ranch’s horses up Milner Pass, then across the Continental Divide on Trail Ridge Road, and finally down to Estes Park and the plains below.¹¹² In later years, Holzwarth’s cowboys took the ranch’s

¹⁰⁹ “A Dude Ranch Is...1874-1986.” *Grand County Historical Association Journal* 6 (June, 1986), 13; Means, comp., “Holzwarth Family,” 21.

¹¹⁰ Marranzino, “Gates Swing Shut.”

¹¹¹ Quoted in Means, comp., “Holzwarth Family,” 21.

¹¹² Dan Abernathy, “Souvenirs of a Cowboy,” *American Cowboy* (August, 1996), 54.

horses over the Never Summer Range to the Vagabond Ranch in North Park.¹¹³ Because of this strategy, the Holzwarths were able to keep many more horses in the valley during the summer tourist season than the Kawuneeche's limited hay reserves could ever have sustained.

The larger horse herds on which the dude-ranching economy depended were only able to survive because of the ecological end-around Holzwarth achieved by wintering the animals outside of the Kawuneeche. This move linked equine metabolisms to ecosystems beyond the valley, yet it also increased the impact so many horses had during the time they spent in the Kawuneeche. The most noticeable effects of growing horse herds on the valley's landscape stemmed from two basic facts of equine life: Horses are big animals with healthy appetites, and their hooves exert great force on the ground as they walk or stand.

Back in the early twentieth century, Park advocates and managers assumed that many tourists would tour Rocky Mountain by horse. Horses, of course, needed to eat. Robert Marshall anticipated the policy of Rocky's first superintendents when he opined in 1913: "Sufficient pasturage for the accommodation of campers"—by which Marshall really meant the saddle and pack horses on which campers primarily relied during the era—"should, of course, be reserved."¹¹⁴ We know too little about the precise effects that grazing horses would unleash on the Kawuneeche's vegetation. But it seems likely that in the high country of Rocky's fabled backcountry in particular, the animals working to carry dude-ranch tourists and wranglers would have feasted on a range of local grasses and other plants, many of them unaccustomed to large grazing animals. Horses also may have introduced exotic plants to new terrain through their dung. At the very least, equines increased wear on popular trails. Traces of their passage must

¹¹³ Excerpt of Nick Brown to [NPS], n.d., in "Memories: I Remember When"

¹¹⁴ R. B. Marshall, "Report on an Examination of the Area of the Proposed Rocky Mountain (Estes) National Park, Colorado," Jan. 9, 1913, folder: "Local History," Box 13, "RMNP Correspondence, 1927-1953," Records of Rocky Mountain National Park, RG 79, Records of the National Park Service, NARA-Denver.

have been particularly severe on the tundra ecosystems to which guides from the Holzwarth place and other ranches often led tourists on off-trail adventures. As Park scientists and officials gained a better understanding of the environmental impact of horses after the dawn of environmentalism, Rocky instituted new regulations that restricted where horses could travel, banned grazing of almost any sort within Park boundaries, and required riding stables and other horse owners to haul certified weed-free hay into the backcountry.¹¹⁵

The ecological effects of horse-based dude-ranching were particularly evident on the private lands where most of the valley's horses spent most of their summers. The need to feed large numbers of horses led landowners to redouble their efforts to transform the Kawuneeche's meadows into highly productive haylands. As a real-estate appraiser noted in 1950, "The principal land use in this area is for Dude Ranching, including grazing and the raising of hay for saddle and pack horses."¹¹⁶ In their efforts to grow more hay, ranchers employed powerful land-shaping technologies that they may not have needed, and certainly could not have afforded, had tourism not taken hold of the valley's economy. At first, settlers had relied upon muscle power—their own and that of their draught animals—to clear, plow, and plant the Kawuneeche's soils. Turning wild riparian areas into productive meadows planted in exotic hay species by hand and horse, however, proved time-consuming, expensive, and risky, particularly given the dense and irascible willow thickets covering much of the valley floor. Most homesteaders, as we have learned, managed to grub out or otherwise clear at least some meadow in the early years of homesteading. But the ability of landowners to remove shrubs and plant exotic grasses improved

¹¹⁵ Grazing in general had been restricted in the National Parks since prior to World War II. Sellers, *Preserving Nature in the National Parks*, 152, 153-155; I have not been able to determine when RMNP first instituted restrictions on equestrian grazing along Park trails.

¹¹⁶ Memorandum to Superintendent, Rocky Mountain National Park, Appraisal Report on Tract no. 314," Jan. 25, 1950, folder 5, box 46, Records of Rocky Mountain National Park, RG 79, Records of the U.S. National Park Service, NARA-Denver.

markedly with the advent of bulldozers, tractors, chemical fertilizers, and other twentieth-century agricultural innovations. As early as 1939, John Holzwarth began using a ‘dozer “to work clearing the Willows on the bottom land at his ranch intending to make a Hay Meadow.”¹¹⁷ Soon, Holzwarth also began from time to time to hire a rotary plow owned by Dwight Miller of Middle Park.¹¹⁸ By 1963, these strategies enabled Johnnie to expand the family’s hay meadow from just a few dozen acres to “200 acres of leveled, prime hayland.”¹¹⁹ Historian Jane Stotts claims that between 1941 and 1954, “willows were cleared ... on five occasions” at the Godchaux ranch near the confluence of Bowen and Baker Creeks, though in this case, the owners’ goal was not more hay, but instead a better, “unobstructed view toward Baker Mountain.”¹²⁰ Dude-ranchers and second-home owners clearly sought different ends when they enlisted machines to clear out willows—feed for the horses on which their businesses depended, on the one hand, and sublime mountain vistas, on the other—but the two groups shared a common view of the keystone shrub in the Kawuneeche’s riparian ecosystems as a nuisance with which they had the power to dispense.

¹¹⁷ RMR, Nov., 1939, folder 25: “A2827 Reports, Monthly (1939) Western District,” temp box 68, RMNP Archives.

¹¹⁸ “A Dude Ranch Is...,” 13.

¹¹⁹ Roger Contor, memorandum to Allyn Hanks, Sept. 6, 1963, folder 006: “L1417 Boundary Adjustments - Boundaries 06/01/1963-03/27/1968,” box 4, Series 2: ROMO land records, RMNP Archives.

¹²⁰ Jane Stotts, *Footprints on a Mountain Landscape: Tracking the History of 160 acres in the Kawuneeche Valley of Rocky Mountain National Park* (Estes Park, Colo.: Rocky Mountain Nature Association, 2005), 45.



Horse herd and elk horns at Holzwarths', 1964, with the Grand Ditch "scar" clearly visible on the mountains above. Photographer unknown, July, 1964, catalog #10-D-488, RMNP Photo Collection.

The practice of bending (and often breaking) the valley environment toward human ends extended from willow thickets to the beavers with which this kind of vegetation had enjoyed a long and mutually beneficial relationship. Efforts to extend and intensify hay production joined the construction of automobile roads, large lodge buildings, and other "improvements" in exacerbating landowners' antipathy towards these industrious rodents. Few private property holders had ever evinced much tolerance for beaver. The dams constructed by the hard-working rodents tended to inundate the very grasslands on which dude ranchers depended for pasture and hay, and on which they often located outbuildings and even homes. Flooding proved inconvenient in the early summer, but the intrusion of water onto meadows during the critical

late-summer haying season threatened was downright disastrous. Many ranchers therefore waged an aggressive battle against beavers, using dynamite to destroy dams built by the creatures and enlisting the assistance of park rangers or state wildlife officers to trap them.¹²¹ The high water tables beavers fostered sometimes posed problems that extended from meadows and fields to the waste-disposal systems that played such an important part in the modern comfort both dude-ranch visitors and recreational home owners generally expected. On the Wetherill property, for example, drainage was reported to be “such a problem that the owner has dug a ‘dry well’ and installed a submersible pump to dispose of seepage water that affects his sewage system.”¹²²

Ranchers who sought to turn the Kawuneeche’s fens into productive hay meadows did not stop at removing beaver. By the mid-twentieth century, the availability of heavy equipment made drainage ditches more practicable and affordable than ever before. In the calculations ranchers made to determine where, how, and when to dig, economic criteria trumped all other concerns.¹²³ Ranchers, freshly empowered by tractors, bulldozers, and other technologies, no longer saw even the contours of the landscape itself as a given. Landowners like Fred Dick used machines to render stretches of the valley more level than ever before by scraping off high ground, filling in low ground, and otherwise reshaping the landscape according to their

¹²¹ Ibid., 55-6.

¹²² Wetherill property, appraisal report, July 16, 1974. Human-beaver conflicts, common though they were in the Kawuneeche, were neither inevitable nor universal; a 1962 appraisal of the Green Mountain Ranch, for instance, mentioned with some surprise that “There is no effort to control the irrigation: the water is just turned in to the place and spreads (somewhat aided by the beavers) thus developing excellent pasture.” Victor Huffaker, appraisal of Green Mountain Ranch, Dec. 5, 1962, folder 38, box 8, ROMO Land Records, RMNP Archives.

¹²³ Stotts, *Footprints on a Mountain Landscape*, 55-56.

desires.¹²⁴ Their primary goal in doing so, of course, was to create the conditions needed to maximize the growth of timothy, clover, and other hay species.¹²⁵

The point of raising more hay, in turn, was to keep more horses—and in better condition. As Johnnie Holzwarth explained:

I like horses, and I like my hay. When you've starved as many horses as I have in the early days when this country didn't produce the hay and I didn't have the money to buy the hay and I was trying ...to stretch it too far Now when I see this big hay growin' there's nobody wants to slash that hay down or put it up more than I do. Or is he more happy than I am when he goes out to feed the horses.

Holzwarth's words celebrated the transformation of a land of scarcity into a place of plenty.¹²⁶

In their efforts to optimize hay production, some Kawuneeche Valley landowners—men and women who generally believed wholeheartedly that one of the best things about the American West was the opportunity it offered for rugged individuals to fulfill their destinies—even sought out guidance from federal agricultural experts. Officials with the Soil Conservation Service, the Extension Service, and other agencies often advised extensive alterations to the existing environment; a 1972 appraisal, for instance, summarized the “very extensive soil conservation” implemented on the Housman's Pontiac Ranch: “Lowlands have been cleared of

¹²⁴ Ibid., 56.

¹²⁵ For mentions of timothy and clover, see Ferrel Atkins, summary of interview with Robert Harbison and Mrs. Robert Harbison, July 17, 1962, folder 20: “History, West Side,” box 1, Atkins Papers, RMNP Archives

¹²⁶ Interview, 1965, quoted in Dick Prouty, “Conservationist Can ‘Take it With Him,’” *Denver Post*, March 17, 1974..

invading willows, gradient ditches have been constructed to drain surface water and fields have been planted to grasses and legumes.”¹²⁷ An earlier conservation plan for the property, meanwhile, specified the clearance of “invading willows,” the application of commercial fertilizer, the construction and stocking of a fish pond, the building of more than 250 rods of fence, “land smoothing,” “hayland planting,” “brush control,” the creation of a drainage ditch, fire suppression, and a range of other measures. Though the “improvements” federal conservation officials encouraged turned out to encompass a wide range of activities, such transformations generally had this much in common: they changed the Kawuneeche’s natural systems, with consequences that often ramified well beyond private-property boundaries.¹²⁸

Private landowners from 1930 through the 1970s, like their forebears of the homestead era, continued to change the Kawuneeche’s lands in all sorts of important ways. Not surprisingly, dude-ranch owners and others who depended on tourism devoted little attention to these transformations when promoting the valley as a vacation paradise. In the course of portraying the Kawuneeche as a sacred wilderness, a frontier throwback, and a modern playground, they paid little heed to the valley’s actual ecosystems. Though this approach made sense, though, it ultimately backfired on the Holzwarths and other private landowners. By depicting the valley floor as an ideal place for visitors to retreat into nature, after all, dude ranches and guest ranches played into the plans of NPS administrators intent on expanding Rocky.

Restoring Nature on the Valley Floor

¹²⁷ Joseph T. Shubert, appraisal of Housman property, June 25, 1974.

¹²⁸ Middle Park Soil Conservation District, Soil and Water Conservation Plan, Pontiac Ranch, May 29, 1963, folder 41: “Housman,” box 8, ROMO Land Records, RMNP Archives.

Park administrators engaged in a halting attempt to buy out inholdings in the 1930s, but most of these efforts focused on Rocky's east side. The financial straits of World War II stopped the Service's land acquisition program, but only temporarily. After enduring military emergency, fiscal austerity, and the post-war tourist boom, Rocky officials finally got their feet back under them. NPS appropriations increased over the course of the 1950s, leading the NPS to renew its efforts to consolidate control over the Kawuneeche.

Director A. E. Demaray signaled the Service's intention to chart a new course in a 1951 memorandum on Rocky Mountain National Park's private land policy. "The condition and use of" private inholdings within the park, Demaray explained, "vitaly affects" the Service's ability to administer Rocky. Demaray asserted: "It can be readily understood that the development of private lands in any national park is contrary to the spirit and intent of the 1916 [National Park Service Organic] Act and to the extent that they exist the National Park Service is unable to fulfill the obligation placed on it by Congress. Consequently," Demaray reasoned, "it is the policy of the Park Service to acquire the private lands as rapidly as funds are made available for that purpose." Demaray felt it unwise to invoke the government's power of condemnation to rid the Park of inholdings: "The National Park Service will explore every possibility of acquiring privately owned lands through negotiations with the owners in order to reach amicable agreements." If good-faith negotiations failed, though, the agency would have to "resort to condemnation proceedings," though this was "generally" only necessary in "locations where lands are urgently needed for purposes in the public interest or where there is danger of natural

features being disturbed or destroyed, such as timber being cut or other forms of destruction or removal of natural resources.”¹²⁹

As Demaray promised, the Park Service largely declined to use the federal government’s power of condemnation in the Kawuneeche. Instead, the government sought to pay fair market value. Many factors, of course, helped to determine what prices the market for the valley’s lands could bear. Land values shot up in step with the broader transformation of the Colorado Rockies into a premiere recreational destination. As a 1959 appraisal of Irwin Beattie’s Phantom Valley Ranch explained,

the advent of new lakes [referring to Lake Granby and Shadow Mountain Reservoir, two U.S. Bureau of Reclamation water-storage projects south of Grand Lake as part of the Colorado-Big Thompson Project], already enhanced by the existing Grand Lake and other fishing and hunting facilities, has served to augment values in the subject area. The scenic attributes in conjunction with the ever-growing tendencies for mountain vacations, have established an intrinsic and permanent trend toward increasing values. The recent sales of fishing and hunting licenses in conjunction with shorter working hours, have served to increase the usage and value of this type of property. Faster modes of transportation which have made the subject property readily accessible to the fast growing metropolitan areas, have increased current values.¹³⁰

¹²⁹ A. E. Demaray, memorandum “Private Land Policy: Rocky Mountain National Park,” Oct. 1, 1951, copy in folder 54: “Neversummer Ranch Appraisal,” box 7, ROMO Land Records, RMNP Archives.

¹³⁰ Victor C. Hffaker, “Appraisal: Phantom Valley Ranch (Tract 309) Grand County, Colorado,” Dec. 1, 1959, folder 2, box 7, ROMO Land Records, RMNP Archives.

The same appraiser noted three years later that, “Because of the trend toward shorter working hours, more leisure time, and the increase in population in the metropolitan areas, demand is constantly increasing for recreational facilities, and accordingly, prices on properties in the area are steadily increasing.”¹³¹

As mountain properties in the Kawuneeche escalated in desirability and price, landowners sometimes received offers from commercial interests; Johnnie Holzwarth, for one, coyly courted interest from realtors in the hopes of pushing up the price the NPS was willing to pay him for his property. At least a few ranch-owners eventually decided to accommodate second-home development by subdividing and selling their lands. Fred and Marilyn Dick, for instance, sold portions of their 160-acre parcel to five different sets of buyers between 1965 and 1971.¹³² For most of these purchasers, the Kawuneeche almost certainly became a second home that they visited primarily during the summer months; whether occupied year-round or just seasonally, though, these homes required various forms of infrastructure. Roads, wells, septic tanks, fences, and so forth further fragmented the valley landscape. Fisheries researcher J. W. Mullan, for instance, lamented of the Kawuneeche: “with private in-holdings, and abutting dude ranches, pastures, and spur accesses,” the valley floor seemed to offer more of an “urban rather than a wilderness atmosphere.”¹³³

By the time Mullan griped about all of these modern intrusions in 1972, the disconnect between these “urban” aspects of the Kawuneeche landscape and the wilderness ideals that stood at the heart of Rocky Mountain National Park’s brand had been motivating the Park Service’s

¹³¹ George McCaslin, “Green Mountain Ranch Appraisal,” Feb. 1, 1963, folder 36, box 8, RMNP Papers, NARA-Denver.

¹³² Stotts, *Footprints in the Mountains*, 54.

¹³³ J.W. Mullan, *Annual Project Report-Fishery Management Program 1972: Rocky Mountain National Park, Larimer, Grand and Boulder Counties Colorado* (Vernal, Utah: , U.S. Department of the Interior, Fish and Wildlife Service, Bureau of Sport Fisheries and Wildlife, Division of Fishery Services, 1972), 12.

efforts to buy up the valley's private lands for nearly two decades. The Mission 66 initiative launched in 1956 provided the Service with administrative support and funds for land acquisition. The Phantom Valley Ranch and the Done Roamin' Cabins were just two of the properties Rocky acquired as a result of the program.

Some owners, though, remained resistant to the Service's advances. Most notably, Johnnie Holzwarth rejected Rocky's initial overtures. In 1963, Holzwarth had established an asking price of \$810,000 for 614 acres of property (he planned to hold on to about 100 acres); Holzwarth also wanted assurance that he could continue to live on the property until he died.¹³⁴ But regional Director George Baggley refused to give Johnnie what he wanted, explaining that "It seems obvious that we cannot give Mr. Holzwarth the assurance he desires nor can we agree to negotiate on his terms."¹³⁵ Superintendent Allyn Hanks, acting as a liaison between the NPS and Holzwarth, spoke of a personal encounter with Johnnie that was "friendly and seemingly understanding." But Hanks also warned of Holzwarth's desire for "a public hearing on any proposal to enlarge the Park in that vicinity."¹³⁶ The NPS, preferring piecemeal expansion in order to keep opponents of Park expansion disorganized and on their heels, and Holzwarth, knowing full well that time was on his side given the rapid increase in land values through the 1960s, reached an impasse.

Such hard bargaining in the late 1960s and early 1970s between Holzwarth and the Service foreshadowed subsequent debates over how the NPS should preserve and commemorate homesteads and dude ranches in the Kawuneeche. In testimony given before Congress in 1965, Donald Lee, former Chief of the Land and Water Division of the NPS, voiced the agency's

¹³⁴ Allyn Hanks, memorandum to George Baggley, July 26, 1963, folder 006, box 4, ROMO Land Records, RMNP Archives.

¹³⁵ George Baggley, memorandum to Allyn Hanks, Aug. 2, 1963, *ibid.*

¹³⁶ Allyn Hanks, memorandum to George Baggley, Sept. 26, 1963, *ibid.*

intention to discontinue “developments of a character not in keeping with the Mission 66 program of the National Park Service.”¹³⁷ Lee was speaking in particular about recent improvements the Holzwarths had made to their land and structures—improvements that some in the Service saw as a signal that the family had resolved to continue dude ranching on their property. Johnnie Holzwarth publicly challenged Lee’s allegations, claiming that his ranch strived “to be in keeping with the National Park building and operation policies,” even though no law required them to do so.¹³⁸ Indeed, Holzwarth reassured Congressional leaders that he understood and accepted that the Park Service would eventually succeed at consolidate all lands within Rocky’s borders under its sole ownership and control.

Such assurances notwithstanding, many within the NPS remained fearful that the Holzwarths would undermine their land-acquisition plans. The agency’s fears had some basis in fact. Around this same time, a valley landowner drafted an anonymous and undated memorandum to Park officials on potential boundary adjustments and severance payments. The memo sought to organize opposition to RMNP boundary extension and land acquisition, and there is reason to believe that Johnnie Holzwarth authored the document (the author stated that his or her family was “going into the forty-sixth year of operation,” a statement that probably applied only to the Holzwarths). The memo painted a grim picture of land acquisition by the Park. It complained of “oppressive” Park regulations, loss of “freedom on our own private property,” and the loss of access to water, wildlife, and pasture for livestock. The landowner also threatened legal action if the NPS offered too low a price; “the owners of this land,” he proudly declared, “have proved they do not need National Park benefits to make the land profitable.” Park Service “control would limit our way of profit and progress and would handicap us in any

¹³⁷ “Ranch Owner Challenges Testimony,” *Rocky Mountain News*, March 28, 1965.

¹³⁸ *Ibid.*

possible future sale.” The Holzwarths clearly understood the strength of their bargaining position, especially given the NPS’s reluctance to employ condemnation.¹³⁹ Park officials would have to up the ante before Johnnie Holzwarth seriously considered selling off the Neversummer; in the mean time, the Service had to do everything it could to keep Holzwarth from raising the kind of ruckus the sentiments expressed in the 1965 memo seemed capable of provoking.

Holzwarth, despite his gamesmanship, ultimately cared about more than money. The dude rancher earnestly believed that his land would fare better if he sold it to the federal government so that it could be incorporated into Rocky Mountain. In fact, he later claimed that he had turned down offers in excess of \$1 million from outside developers; in a 1974 interview with the *Denver Post*, Holzwarth recalled: “Those realtors tried to get me to consider the money-making aspects of the place, but I hadn’t spent most of my life putting the place together just to see it pieced out again.”¹⁴⁰ Fearing the subdivision of the property his family had labored for decades to assemble, transform, and make their own, Holzwarth bided his time.

The Park’s campaign against inholdings accelerated in the early 1970s. In 1972, Rocky acquired 135 acres from Holzwarth for \$750,000, but the family still retained 639 acres of prime bottomland. A 1974 article in the *Denver Post* bearing the dramatic title, “Kawuneeche Valley Fate in the Air,” declared that the valley stood “at a crossroads between development and a return to its natural state. If the National Park Service can muster the funds, the valley at the foot of the snowy, spectacular Never Summer Mountains will have the curtain closed on its history as a resort area.” Rocky, the article claimed, had acquired “about 13,000 acres of [in]holdings in the park since it was established in 1915.” Private landowners retained only 1,500 acres within

¹³⁹ Anon., memorandum to Park officials, n.d. [1964 or 1965?], folder 56, box 5, ROMO Land Records, RMNP Archives.

¹⁴⁰ “Conservationist Can ‘Take it With Him,’” *Denver Post*, March 17, 1974.

the Park's exterior borders, but this was too much in the eyes of the NPS.¹⁴¹ The continuing presence of private lands within Rocky's borders, after all, posed significant management hassles while jeopardizing public access to and enjoyment of the Park.

The NPS moved to block others from purchasing and developing the Holzwarth place. The Park's objective in acquiring the property, Superintendent Roger Contor declared, was to return the valley to the animals: "It's a wildlife paradise, is what it is," Contor gushed of the Kawuneeche in a line that could have been taken straight from a promotional brochure written by Johnny Holzwarth or Irwin Beattie. Holzwarth, perhaps seeking NPS goodwill and public support, increasingly portrayed the Park Service in the early 1970s as the rightful heir to the conservation legacy his father and other homesteaders had supposedly bequeathed. "I was no conservationist when I first started," Holzwarth admitted to a reporter. "I didn't know any better," the old trapper, rancher, sawmill operator, and elk menacer contritely remarked. "But as time went on I realized what I had and how nature works things. It was a wonderful experience having the ranch," Holzwarth concluded. "I am part of it."¹⁴²

To return the Kawuneeche Valley to Contor's "wilderness paradise," that vital link between Holzwarth and his ranch would have to be severed. A critical step in that process occurred when the Nature Conservancy tendered a loan to the NPS, thus giving the agency the money it needed to close on the \$1.625 million dollar deal it had made with Holzwarth.¹⁴³ On March 13, 1974, a tearful Johnnie "signed away his Never Summer Ranch" and "with a stroke of

¹⁴¹ Steve Wynkoop, "Kawuneeche Valley Fate in the Air: Development vs. Return to Nature," *Denver Post*, Feb. 3, 1974.

¹⁴² Quotes from Prouty, "Conservationist Can 'Take it With Him.'"

¹⁴³ "Kawuneeche Valley Fate in Air," *Denver Post*, February 3, 1974.

the pen, 54 years symbolically ended.”¹⁴⁴ In the process, the last large parcel of privately held land in the Kawuneeche returned to the public domain.

After finalizing negotiations to sell his remaining property in the Kawuneeche to the NPS, Johnnie Holzwarth undoubtedly took some consolation not only in the price he had received, but also in a concession he had maneuvered the Service into accepting: Rocky pledged to preserve the Holzwarth family’s homestead and celebrate its role in the Kawuneeche’s history by turning part of the property—known by its original name of the Holzwarth Trout Lodge—into a so-called “Living History” site. A *Denver Post* article entitled “Rancher Sold Land to Save It” explained that “life on the ranch before electricity will be authentically recreated—under Holzwarth’s guidance—for park visitors.”¹⁴⁵ No one—not the *Post* journalist, not Holzwarth, and not the NPS—apparently felt any need to justify electricity, which reached the property in the late 1940s, well after the ranch had begun to derive most of its income from tourism, as a meaningful watershed between a homesteading past worthy of commemoration, and a dude-ranching present that deserved only to be obliterated. The NPS subsequently leveled most structures associated with the Neversummer Ranch in 1974. The Service also began to restore many of the older structures on the Holzwarth’s original property as part of its plan for an interactive outdoor museum in the heart of the Kawuneeche Valley—one where Park volunteers and employees would play the roles of homesteaders by baking sourdough bread, working hay meadows with horse-drawn equipment, and performing other kinds of primitive work intended to offer an authentic and entertaining recreation of a pioneer past.

¹⁴⁴ “Rancher Sold Land to Save It,” *Denver Post*, March 14, 1974; “Holzwarth Ranch Bought for Parkland,” *Rocky Mountain News*, March 14, 1974.

¹⁴⁵ “Rancher Sold Land to Save It.”

The decision by Park managers to dismantle the Holzwarth's dude ranch made homesteading the museum's focus. Given the family's early embrace of tourism, its decision to dive headlong into the dude-ranching business little more than a decade after settling in the Kawuneeche, and its early dependence on tourist dollars to push the family's finances out of the red and into the black, this choice effectively elevated an illusory theme in the histories of the Holzwarths and the Kawuneeche into the valley's primary public narrative. In the process, it revealed the Park Service's tendency to simplify the valley's past, the changing human-environment relationships so integral to that history, and the ongoing tendency of human-induced environmental transformations to thwart federal management in the Kawuneeche. The story of the short-lived Holzwarth living-history project also offers an object lesson in the broader tendency of Rocky's consolidation of ownership and control over the valley landscape to yield unintended consequences.

The Park Service's decision to dismantle Holzwarth's dude ranch while preserving the homestead reflected the overriding ambivalence that characterized Rocky Mountain National Park's treatment of history and historic structures on the many thousands of acres of private lands the NPS had acquired since 1930. We have already seen how Water Storage and Supply Company crews worked in the 1930s to eliminate or mitigate the blight the NPS believed that ditch camps presented in a national park geared toward cultivating and fulfilling a wilderness aesthetic; CCC crews performed much the same function at Lulu City, cleaning up "many old cabins, associated trash, [and] abandoned mining equipment" in and around the former mining camp.¹⁴⁶ In the decades thereafter, the Service continued its campaign to erase most vestiges of human labor and human inhabitation from the land by destroying many of the homesteads,

¹⁴⁶ William Butler, "The Civilian Conservation Corps in Rocky Mountain National Park," 2005, typescript report on file at RMNP Archives, p. 2.

ranches, cabins, vacation homes, and outbuildings standing on the lands the Service acquired; the agency also converted some structures into service buildings and employee housing, and it sold others to buyers willing to move them.¹⁴⁷

Clearing buildings from settlement landscapes dovetailed with the larger desire of Park officials to portray the Kawuneeche Valley as a quasi-wilderness, a colorful place touched—but only in the gentlest, most picturesque manner—by mining, ranching, timbering, trapping, and other extractive industries characteristic of the Old West. After all, virtually everyone agreed that Rocky was a “nature” park, not a “history” park. From the 1930s onward, Congress had charged the NPS with preserving both types of sites. But the Service as an institution took many decades that the realms of nature and history could not be so cleanly cleaved. Thus the disregard, even hostility, that Rocky’s administrators long evinced toward the remains of the area’s human history conformed with the Service’s need to portray the private lands it wanted to eliminate as sufficiently intact and scenic to warrant inclusion in the Park.

Economic, administrative, and legal concerns joined these ideological desires in leading the Park to raze many of the buildings and outbuildings on the lands it acquired in the Kawuneeche. “The purchase of West Side inholdings,” Western District ranger Richard Ward warned in the course of deliberations regarding the disposition of the Holzwarth property, “presents an overwhelming demand upon manpower and funds if we are to restore the Park to a natural condition.”¹⁴⁸ Restoring and maintaining old structures was difficult and costly. Moreover, as the Park engulfed private lands, it had to reckon with the likelihood that visitors would view former inholdings as objects of interest. Live electrical wires, faulty floors, collapsing ceilings, and hidden intersections between old ranch roads and Trail Ridge Road all

¹⁴⁷ Many structures were converted to Park uses at Green Mountain Ranch and Onahu Ranch.

¹⁴⁸ Richard Ward, memorandum to RMNP superintendent, Aug. 31, 1972, folder 82, box 9, RMNP Archives.

exposed travelers to harm, and the government to legal liability. Leveling structures not only seemed prudent in its own right, then, but also reduced the Service's obligation to repair and keep up the troublesome and expensive networks of pipes, wires, roads, and so forth that had enabled dude ranchers to promise, and vacation home-owners to enjoy, such modern comforts as indoor plumbing, electricity, and easy automobile access.¹⁴⁹

The RMNP *Final Master Plan* completed in January, 1976, summarized the Park's guiding vision as it expanded to incorporate the old homesteading and dude ranching landscapes of the Kawuneeche: "Man's impact must be minimized and controlled."¹⁵⁰ The irony, of course, was that "man" alone could do the minimizing and controlling of which the plan spoke.

The NPS had actually started making plans for the Holzwarth property several years before the completion of the 1974 deal. Ward had suggested back in 1972, in fact, that the agency needed to remove "all remaining manmade intrusions" from the dude ranch, "such as houses, fences, roads (including bridges and remaining access road lying east of the river)[,] signs, water, sewer, and power systems, and campground." All of these features embodied everyday life in the 1970s. They were not vestiges of the past, but rather reminders of the very present that visitors came to Rocky Mountain to escape and forget. Tourists and NPS officials alike evidently preferred to encounter what Ward termed "the Old Homestead units," with the capital letters signifying the starring role these buildings were to play in History according to the Service.¹⁵¹

¹⁴⁹ Many of these concerns are evident in Ward's 1972 memo; *ibid.*. For instance, he claimed that by "remov[ing] the Colorado River Smith house, Hilltop, Summerland houses and several sub-standard units at Onahu," the service "could remove the associated roads, power, water, and sewer system [sic] at these scattered areas." *Ibid.*

¹⁵⁰ National Park Service, *Rocky Mountain National Park: Final Master Plan* (Washington, D.C.: National Park Service 1976), 1.

¹⁵¹ Ward, memorandum to RMNP superintendent, Aug. 31, 1972.

A memorandum drafted by Rocky Superintendent Roger Contor in May, 1972 discussed alternatives for the site using a similar dichotomy between past and present. Continuing to serve overnight guests at the ranch under NPS management, Contor argued, would exclude the general public, and thus violate the Service's mandate. Though Contor dismissed the possibility of the NPS operating Holzwarth's as a dude ranch, he understood that "care must be taken to see that those structures with truly significant history be retained." At the same time, Contor wanted "assur[ance] that marginal relics be disposed of to allow for the reclamation of the natural, prime resource scene."¹⁵²

Contor never explained what criteria the Service should use to sort out the wheat ("structures with truly significant history") from the chaff ("marginal relics"). The remainder of Contor's memo, though, showed that only structures on the homesteading portion of the property (built, with a few exceptions, in the comparatively short period between the family's arrival in the valley in 1917 and the start of the dude-ranch expansion in 1929) met his definition of "truly significant." Most structures built after 1929 struck Contor as too new and common to offer visitors any real sense of the past. Indeed, Contor preferred that the Service dismantle the dude ranch and pretend it never existed; including it in an historic site that would expose visitors to the histories of both homesteading and dude ranching struck Contor as deeply undesirable. The Neversummer, Contor bluntly reckoned, lacked "sufficient significance to warrant interpretation at site following obliteration."¹⁵³ This reasoning led Contor to recommend that the dude-ranch "complex be obliterated and the land restored to natural condition," a plan which the Park

¹⁵² Roger Contor, memorandum to Director Midwest Region, May 14-15, 1972, folder 56, box 5, ROMO Land Records, RMNP Archives.

¹⁵³ Ibid. This notion of obliteration of the dude ranch, according to the discussion, did not upset Johnnie Holzwarth because "he would rather have this alternative than have someone else run it now that he has sold the place." Perhaps Johnnie's indifference on this matter allowed the NPS to proceed with focusing on the homestead over the dude ranch. Had Holzwarth lobbied from the outset for more emphasis on his tourist operations, the NPS may have reconsidered its long-term goal for the site.

Service hastened to implement.¹⁵⁴ As for the homestead, Contor argued that preserving it as a “Living History” locale was “perfectly acceptable” because the acquisition of many other private holdings had facilitated what he called a “return to the pristine” elsewhere in the Kawuneeche.¹⁵⁵

Contor and other NPS decision-makers were playing fast and loose with the valley’s social and environmental history. It mattered little to them that the Holzwarths were among the last homesteaders to settle the valley, that they arrived in a landscape that was hardly “pristine,” or that the family had done everything in its power to transform the valley “wilderness” into a cultivated, settled, and comfortable place. As for Contor’s conceit of a “return to the pristine,” the conundrum posed by fisheries researchers seven years earlier cut to the heart of the problems that bedeviled ecological restoration in the Kawuneeche: no one knew for sure when that idealized baseline had actually existed, what it really comprised, or how it might be recreated. For Contor, and presumably for many of his colleagues, the highest use the Holzwarth place could fulfill was as a dynamic monument to pioneering—to those first physically challenging, spiritually rewarding encounters of an innocent people with a raw land. Only in this limited and contradictory manner could Contor, and presumably many of his co-workers at the NPS, find a way of accommodating the Kawuneeche’s human history within the naturalistic narrative on which the Service had premised its four-decade campaign to incorporate the valley’s private lands into Rocky Mountain National Park. Making this vision manifest at Holzwarth’s led the Service into a short-lived and deeply misguided effort to deny the important roles that dude ranching and tourism had played in shaping the Kawuneeche Valley’s history and landscape over the previous six decades.

¹⁵⁴ Ibid.

¹⁵⁵ Ibid.

As a practical matter, recreating mythic encounters with a bygone era that never existed in pure form required a great deal of work. Plans for the living history museum required new visitor facilities, parking areas, and trails; waste from comfort stations and garbage receptacles had to be removed from the site, too. Hiring and training interpreters who could make the pioneer era of the 1920s come alive for tourists required still further thought: How should employees dress? What characters should interpreters attempt to embody, and what activities should they perform for the entertainment and edification of visitors? Turning the homestead into a museum would tax Park resources while at the same time altering the valley landscape.

By June of 1974, the Holzwarth homestead opened to Park visitors. Two volunteers moved into the buildings formerly inhabited by the family; adorning period attire, they guided visitors on a two-hour tour of the site. Highlights included Holzwarth family photo albums, which visitors were free to peruse; a snack of sourdough bread freshly baked by interpreters; and recorded “tapes of Johnnie’s salty recollections.”¹⁵⁶ By summer’s end, the Park Service had welcomed over a thousand visitors to Holzwarth’s.

National Parks & Conservation Magazine was probably the first national publication to describe the museum. The headline of a June, 1975 article notified a large audience of national-park supporters that “Rocky Mountain National Park’s First Living History Program Revives the Colorful Holzwarth Dude Ranch of the 1920s.” Since the museum actually emphasized homesteading to the exclusion of dude-ranching, which the family had not begun to pursue in earnest until 1929, the article’s title reflected ongoing confusion regarding just which history the museum meant to commemorate.¹⁵⁷ Author Lynn Mohn declared that the NPS intended to use

¹⁵⁶ Ibid.

¹⁵⁷ Mohn, “Raising Pansies, Radishes, and Hell!” 10; James D. Mote, *Holzwarth Homestead: Historic Structure Report and Historic Furnishing Study, Rocky Mountain National Park, Colorado* ([Denver?]: Department of the Interior, National Park Service, 1982) 18.

the site to “put the common man and his history back in the ecosystem.” It was an illuminating turn of phrase—one that revealed a widespread contemporary assumption that “history” and “ecosystem” comprised distinct categories in need of reconciliation. By honoring the Holzwarths, the Park Service claimed it was highlighting “an important piece of the hitherto untold saga of the region’s pioneers.”¹⁵⁸

The NPS subsequently dedicated more resources to enhance the visitor experience at the homestead. The Rocky Mountain Nature Association helped out by publishing a visitor brochure (funded, as it turns out, by Johnnie Holzwarth) that encouraged guests to take a self-guided tour on which they would “enter the world of a 1920’s pioneer dude ranch.”¹⁵⁹ Visitors came in droves, with 10,849 touring the grounds in the summer of 1977 alone—more guests than the Never Summer Ranch could have accommodated in ten to twenty years.¹⁶⁰ No one seems to have noted the environmental toll rapid growth in visitation levied on the property.

Meanwhile, the Holzwarth lands continued to produce hay—a legacy of the property’s time as a working ranch that might reasonably have seemed to conflict with the Park Service’s desire to restore “natural conditions” to the land. In order to reconcile the living-history idea with the NPS’s desire to continue working Holzwarth’s land (no one ever saw fit to articulate the motivation underlying this desire, but at least some Park officials may have seen Holzwarth’s meadows as so much elk feed), “the Homestead staff attempted to use an older team of horses supposedly used by Johnnie to pull haying equipment. A small hayfield near the ranch was initially used in August [of 1975] to show the visitors how such equipment was used.” The volunteer interpreters, however, lacked Johnnie’s experience in working with animals; one day,

¹⁵⁸ Mohn, “Raising Pansies, Radishes, and Hell!,” 13.

¹⁵⁹ Linda Griffin, Barb Hicks, Michael Kunde and Molly O’Malley, *Holzwarth Homestead* (Estes Park, Colo.: The Rocky Mountain Nature Association, 1977), 2.

¹⁶⁰ “Holzwarth Homestead Final Report for 1977,” folder 2, temp. box 130, RMNP Archives.

“the horses ran away with the equipment and handler and the project was dropped as hazardous to handler and stock.”¹⁶¹ And so from 1976 until at least 1984, the Park issued a Special Use Permit to Ken Bruton of the Sun Valley Ranch to cut and bale hay on Holzwarth’s, with the park receiving 40% of the harvest and Bruton taking the remainder. “The permittee,” a memo from the West Unit Manager to the Assistant Superintendent noted in 1984,” “was to fertilize, irrigate, cut and bale the hay. Fertilizer was applied 3 years out of [the previous] 8.”¹⁶² Into the mid-1980s, the Holzwarth homestead remained both a productive landscape, and a site of touristic consumption.

Making history come alive at Holzwarth’s required ongoing labor on the land; it also provoked criticism. In his 1982 book, *Dude Ranching*, Lawrence Borne, who had frequently stayed at the Neversummer, expressed his dismay with the Park Service’s interpretation of the site. Borne, clearly having imbibed the spirit of Johnnie Holzwarth sought to inculcate, complained that the Service “ha[d] never explained why it is worthwhile to reconstruct a 1920s spot complete with enthusiastic young people baking sourdough bread while destroying a ranch that offered people a chance to experience the wilderness.”¹⁶³ James D. Mote’s 1982 historic structure report also questioned the Park’s efforts to simplify the Holzwarths’ history. Mote claimed that neither the Holzwarths nor their homestead met the usual definitions of “historical significance”; the desires of the Park Service to acquire the property, he argued, had led the agency to concoct the living history museum concept as a bargaining tool in their negotiations

¹⁶¹ Larry D. Reed to Assistant Superintendent, May 18, 1984, folder 6, box 16, ser. 5, RMNP Land Records, RMNP Archives.

¹⁶² Ibid.

¹⁶³ Borne, *Dude Ranching*.

with Johnnie Holzwarth. The homestead era, Mote insisted, constituted little more than a “way-station” in the history of the family and the land.¹⁶⁴

Though the NPS continued to maintain that its museum at Holzwarth preserved and honored the valley’s history as a settlement frontier, Borne, Mote, and other detractors accused the NPS of preventing visitors from grasping the real story of the property; dude ranches, tourist landscapes, and the wilderness beyond, such critics alleged, all played more important roles in the Kawuneeche’s history than homesteading ever had. Early settlement, after all, had been characterized not only by primitive work and picturesque hardship, but also by instability, suffering, and failure. Only when tourists, drawn primarily by the creation and expansion of Rocky Mountain National Park, began to push northward in numbers from the old resort center of Grand Lake into the new Park did settlers such as the Holzwarths finally secure a viable foothold in the Kawuneeche.

In the final reckoning, the Kawuneeche Valley constituted something of an afterthought in the larger saga of homesteading. Yet the valley stood at the center of new recreational trends that reshaped many parts of the Mountain West from the 1910s through the 1960s—and down to the present day. Historian Earl Pomeroy astutely proclaimed the dude ranch “perhaps the most characteristic institutionalization of the new era in Western recreation and vacation travel” that emerged in the middle decades of the twentieth century.¹⁶⁵ Park Service employees, including landscape architects, planners, scientists, and administrators, undoubtedly saw dude ranches and other elements of the touristic landscape as too new, too inauthentic, and too tainted by the materialistic culture of consumerism that the national parks alternately sought to encourage, contain, and keep at bay. The great tragedy of all this, of course, was that Holzwarths

¹⁶⁴ Mote, *Holzwarth Homestead*, 27.

¹⁶⁵ Earl Pomeroy, *In Search of the Golden West: The Tourist in Western America* (Lincoln: University of Nebraska Press, 1957), 167.

constituted a pretty lousy place to celebrate homesteading, and a very good one for preserving and commemorating the history of dude ranching in the Kawuneeche.

Park officials eventually responded to critics of the Holzwarth living history museum with a thorough overhaul. With the passage of time, dude ranches seemed to shift from the Park's present to its past, and the Service's discomfort with tourism as a historical subject in its own right began to waver. Over the course of the 1980s, Rocky broadened the interpretive programs presented at Holzwarths; the agency also changed land-management practices on the property. The arrangement by which Ken Bruton worked the old Holzwarth hay meadows struck Park managers as incongruent with Rocky's master plan for the Kawuneeche. Consequently, a RMNP official informed Bruton in summer, 1984, that "it is anticipated that the permit will not be renewed in 1985." He explained that "this action follows our objective of returning much of the valley to more natural conditions." By ending almost seven decades of cultivation on the property, another official, West Unit Manager Larry D. Reed, predicted that the area would soon revert "to beaver ponds," a landscape feature that Johnnie Holzwarth had done his darnedest to eliminate.¹⁶⁶ But as we will learn in the next chapter, other dynamics afoot in the Kawuneeche have wrought havoc with Reed's prediction that beavers would re-inhabit the property.

From Packhorses to Backpacking: Trails of Change

The Park Service's push for homogenization extended from the Kawuneeche valley floor to the slopes and high country above. And in these domains, as on the valley floor itself, the campaign to incorporate the valley into Rocky Mountain generated no shortage of pushback.

¹⁶⁶ Reed to Assistant Superintendent, May 18, 1984; James. B. Thompson to Kenneth L. Bruton, June 12, 1984, folder 6, box 16, ser. 5, RMNP Land Records, RMNP Archives.

As of 1930, the Kawuneeche possessed a range of travel corridors: automobile roads, but also several former Indian trails, most of them overlaid by newer, narrower, and more clearly defined thoroughfares; old wagon roads, some still in use, connecting various parts of the valley to each other as well as to the outside world; and recreational trails blazed by the forest service, the park service, and dude ranch employees. About 30 miles of hiking and riding trails wound within the NPS-controlled portion of the valley in the 1920s. The Never Summer addition and the construction of new trails by the CCC brought that total to around 50 miles by the close of the 1930s. Continuing park expansion and the efforts of Rocky officials to build additional trails around Grand Lake and into the Kawuneeche backcountry resulted in the construction of an additional 70 miles of trails by the 1980s, thus extending the valley's trail system to around 120 miles in all.

Prior to the 1920s, Rocky's trails were scattered, poorly maintained, and often unmarked. Superintendent Roger Toll, an active hiker and mountaineer, initiated a general trail plan in the mid-1920s. Under Toll's guidance, the Park began to build a coherent trail system that featured more loop trails and circuit routes. Rangers identified and repaired existing trails; with Toll's guidance, they also planned new routes.

The resulting 1926 Trail Program articulated potentially contradictory goals: minimizing environmental impact, moderating the difficulty of travel routes, and maximizing visitors' exposure to the glories of Rocky Mountain. "Most of the present trails will require reconstruction," the program plan argued, "in part or for their entire length, in order to eliminate excessively steep grades, rocky and badly washed sections, swamps, mud holes and other difficult or dangerous places. Trails should not have more than 15% grades. They should be properly drained so that they will not be destroyed by water." Trails, the document continued,

“should be cleared sufficiently to avoid riders or packs being rubbed against tree trunks or caught by projecting branches. They should take the most direct route practicable, but when possible the route should include scenic features such as view points, water falls [sic], lakes and other objects of interest.”¹⁶⁷

In a trail plan adopted the next year, in 1927, Toll articulated five principles he believed would make Rocky a more rewarding destination for hikers and equestrians:

(1) Places of particular scenic interest to visitors should be made accessible by trails. (2) Trails should start from or be accessible to the points where saddle horses are available to visitors. (3) It is desirable to connect a number of the places where horses are available by trails, so that visitors may take extended tours on horseback and at the end of the day’s trip find accommodation available for themselves and their horses. (4) Whenever topographic features permit, the various trails of the proposed system are connected so as to make the trail flexible and to form circle trips, which are always preferable to ‘dead end’ trips. These connections also make the park more accessible for administrative purposes and fire protection. (5) Some portions of the park are particularly adapted to making camping trips with pack horses. Visitors are nearly always enthusiastic about these trips and they should be encouraged.¹⁶⁸

It was a thorough, even ambitious program—but one that proved hard to translate into action.

¹⁶⁷ Rocky Mountain National Park, *General Trail System, Rocky Mountain National Park* ([n.p.]: NPS, 1926), on file at RMNP Library, 1-2.

¹⁶⁸ Rocky Mountain National Park, *Five Year Road and Trail Program* (Estes Park, Colo.: National Park Service, 1927), folder 600-03, box 3, D-Files, RMNP Archives, 6.

The Five Year Road and Trail Program developed according to Toll's principles reflected both the assumption by Park planners that many tourists would travel by horse, and the desire of Park officials to attract tourists to Rocky for overnight stays instead of day trips. "More than a thousand saddle horses are in use by park visitors during the summer season," the plan claimed. "Horseback travel on the more passable trails is heavy and increasing each year. Thousands of other visitors make many trips on foot. There is no question but that the demand for better and more trails exists," the plan declared, "and that with a better trail system many visitors to this park would prolong their stay and see to much better advantage the park that was created for their use."¹⁶⁹ The five-year plan reflected the symbiotic relationship that generally prevailed between the Park Service and the operators of dude ranches, guest ranches, and livery stables—all of whom shared a common desire to lure visitors out of their cars and onto backcountry trails.

The NPS accordingly dispatched engineer Allison Van V. Dunn to Rocky in the summer of 1929 with orders to create "a better trail system" using the latest planning and construction techniques. Previously, rangers Jack Moomaw and Fred McLaren had largely "decide[d] all the details of trail construction," according to William Ramaley's unpublished history, "Trails and Trailbuilders of Rocky Mountain National Park."¹⁷⁰ In contrast to the previous practice of developing trails in a decentralized, even idiosyncratic manner, the Park Service now sought to wed Roger Toll's principles of trail construction with the expertise of professional engineers.

Dunn's arrival may have improved planning for trails, but extensive trail construction in the Kawuneeche actually awaited the confluence of two factors in the early 1930s: the Never Summer annexation, which greatly expanded the area in need of new trails, and the Great Depression, which spurred the federal government to embark on one of the most elaborate public

¹⁶⁹ Ibid., 5.

¹⁷⁰ William Ramaley, "Trails and Trailbuilders of Rocky Mountain National Park," n.d., mss. on file, RMNP Library, 41-42

works programs of all time. Funded by the New Deal, Emergency Conservation Workers (ECW) and Civilian Conservation Corps (CCC) crews busied themselves during most summer seasons by pushing new trails from their camp near Phantom Ranch into the newly acquired parklands. An extended excerpt from Rocky's 1936 Master Plan described the progress made up to that date on a couple of key routes:

Red Mountain Trail - 3.0 Miles. This trail was constructed during the summer of 1933 by a crew of E.C.W. boys, on an 18" standard. This trail was constructed in order to make accessible to fire protection equipment the southern part of the Never Summer that is within the Park boundary. The trail extends from Phantom Valley Ranch in the Colorado River Valley to the Grand Ditch, making the ascent along the slope of Red Mountain. . . .

Colorado River Trail - 5.7 Miles. This trail was constructed during the summer of 1933 by a crew of E.C.W. boys, on an 18" standard and extends from Phantom Valley on the floor of the Valley to Poudre Pass. This trail connects with the Grand Ditch about three miles above the point where the Red Mountain Trail connects with the Grand Ditch.¹⁷¹

These two new routes created "a loop trail of about eleven miles in length from which the entire Never Summer range within the Park and the upper end of the Colorado River Valley can be served by fire equipment. The Red Mountain trail climbs up to the Ditch on the slope of Red

¹⁷¹ National Park Service, *The Master Plan, Rocky Mountain National Park, 1936* (n.p.: National Park Service, [1936]), drawer 7, flat files, RMNP Archives.

Mountain and the Colorado River Trail follows the Colorado to its source at Poudre Pass.”¹⁷²

True to both Rocky’s enabling legislation, and the NPS Organic Act, the trail expansion pushed forward by ECW and CCC crews sought to provide for the public enjoyment of the lands recently added to the Park. In the process, these routes brought hikers and riders—not to mention trail crew members, park rangers, and others—into contact with several key sites in the Kawuneeche’s still-unfolding environmental history, including Lulu City, the Grand Ditch, and large stretches of forest burned over during the large wildfires of the late nineteenth century.

On the whole, trails built in the ‘30s followed the Rustic Architecture and Naturalistic Design philosophy then ascendant in the NPS. CCC men used basic forms and natural materials to build trails; to the extent possible, the service attempted to make trails conform to and mirror the landscape, but they also engineered them to withstand erosion as well as the wear and tear of horse and foot traffic. The ideal trail brought visitors into ostensibly wild nature while shielding them from the constructed nature of the thoroughfares on which they traveled. Service-wide practices governed trail construction: “Four grades, or types, of trail were being built during this era,” claimed Ramaley, ranging in width from eighteen inches to four feet in width. “All major trail construction was built to a standard where the beating of steel shod horse hoofs would not damage the trail.”¹⁷³ Roger Toll believed that the best way to make trails that could withstand heavy pressure was by using a compressor, even though this necessitated the widening of eighteen-inch trails to three-feet.¹⁷⁴

As CCC activity in Rocky wound down in the early 1940s, trail-building also slowed. There is little evidence of significant new construction in the Kawuneeche over the ensuing quarter century, primarily because Rocky officials devoted scarce resources to land acquisition

¹⁷² Ibid.

¹⁷³ Ramaley, “Trails and Trailbuilders of Rocky Mountain National Park,” 62.

¹⁷⁴ Ibid., 39.

instead during this period. As the agency bought up dude ranches and guest ranches, horse traffic in the valley surely must begun a slow decline. Only with the advent in 1956 of Mission 66, a ten-year construction plan initiated by NPS Director Conrad Wirth and intended to celebrate the agency's semi-centennial, would the Service again devote much energy to trail construction in the Kawuneeche.

"Construction is an important element of the program," the Mission 66 Program for Rocky explained. "Modern roads, well-planned trails, utilities, camp and picnic grounds, and many kinds of structures needed for public use or administration" were needed "to meet the requirements of" increased visitation.¹⁷⁵ New structures, increasingly designed in the streamlined, cost-effective Park Service Modern Style instead of the naturalistic, hand-crafted Park Service Rustic Style that had dominated NPS design at Rocky since the Park's creation, replaced "outmoded and inadequate facilities."

In keeping with the mandates of RMNP's enabling legislation and the Park Service Organic Act of 1916, the Mission 66 building program aimed to make "physical improvements adequate for expected demands but so designed and located as to reduce the impact of public use on valuable and desirable features."¹⁷⁶ The program noted "a marked increase in the use of Park facilities each year," estimating that "two million people will visit Rocky Mountain National Park annually by 1966. To serve these people, development must be done with extreme care so as to conserve and protect the natural features from damaging use, as well as to protect the Park visitors and provide means of enjoying the Park, which are the primary responsibilities of the National Park Service."¹⁷⁷ Mission 66 symbolized the Service's growing tendency to

¹⁷⁵ National Park Service, *Mission 66 for Rocky Mountain National Park* (n.p.: National Park Service, n.d.), RMNP Archives, unpaginated preface.

¹⁷⁶ *Ibid.*, unpaginated preface.

¹⁷⁷ *Ibid.*,.2

accommodate the potentially conflicting goals of preservation and visitation through spatial fixes. While dude ranch promotional materials had promised visitors that they could access both modern comfort and wilderness edification on the common ground of the Neversummer Ranch and its competitors, Mission 66 instead sought to segregate these two kinds of amenity. The new Kawuneeche visitor center; an improved Trail Ridge Road; and new parking lots and trailheads (almost invariably built on ground acquired from dude and guest ranches) all featured synthetic materials and forms that departed significantly from naturalistic principles. Most of the rest of the valley, by contrast, was slated either for restoration to “natural conditions,” or intentionally left beyond the reach of all but the hardiest Park visitors.

Despite the work Toll and the CCC had devoted to trails between the late 1920s and the early ‘40s, Mission 66 planners, like their precursors, portrayed the Park’s existing trails as poorly maintained and poorly designed, citing “a lag in funds and manpower” that had prevented “general maintenance and modernization of physical facilities.”¹⁷⁸ Trails had deteriorated badly. “With few exceptions,” they required “retreading or relocation. New trails are needed to connect with some of the old trails so that visitors can follow loop routes, without back-tracking, and see more of the outstanding features of the Park.”¹⁷⁹

The Mission 66 plan called for eighteen miles of new trail, which would “provide four cross-mountain routes and desirable loop-routes connecting major points of interest.”¹⁸⁰ The final Mission 66 prospectus for 1957 expressed the need for “improved circulation of the visitors to points of outstanding scenic or scientific interest away from the roadways.”¹⁸¹ More than ever

¹⁷⁸ Ibid., 2

¹⁷⁹ Ibid., 3

¹⁸⁰ Ibid., 5.

¹⁸¹ National Park Service, *Mission 66 Prospectus, Rocky Mountain National Park and Shadow Mountain Recreation Area, 1957*, RMNP Archives, 6. In a more detailed passage addressing the RMNP circulation system, the document crowed: “More than 300 miles of trails supplement the road system of

before, Rocky officials sought to encourage visitors to get out of their cars—and thus to spend more time in the Park than the customary half-day driving tour along Trail Ridge Road entailed.¹⁸²

Mission 66 stressed “improved circulation” of visitors “away from the roadways.” But Superintendent Novak’s Backpacking Committee, formed in the early 1960s, blasted the Park’s trail network in terms that suggested that neither Roger Toll nor Mission 66 had accomplished their respective goals:

Many of the Park’s trails have been poorly located and are difficult to travel and maintain. There is a lack of connecting trails or ‘loop’ trails. There is only one east-west trail in the park. There is no north-south trail in the park, and presently there are pressures for the Park to establish a ‘ridge’ trail along the Continental Divide to connect other trails to the south and the north of the park.

In light of these shortcomings, the committee “elected to attempt to provide a trail system for the Park that will ultimately make the system more useable and provide maximum protection for the back country [sic] of the Park.”¹⁸³

Another section of the same report signaled an important shift in Rocky’s ideal visitor type: while Toll had championed equestrians, the wilderness-loving backpacker was fast becoming the key figure in the Park’s efforts to reconcile the apparent paradox between

the Park and there is almost no limit to the opportunities they offer for circulation to the major points of scenic and scientific interest within the Park.” *Ibid.*, 32.

¹⁸² The NPS’s overriding concern in this regard seems to have been a desire to alleviate overcrowding along road corridors in order to provide visitors with a more “natural” experience.

¹⁸³ U.S. Department of Interior, “A Report to the Superintendent for A Back Country Management Plan in Rocky Mountain National Park,” May, 1965, on file at RMNP Library, 48.

increased backcountry use and stable of declining human impact on the wilderness. This shift reflected the increasing sway of a new interpretation of the Park Service's guiding mission: to protect "wilderness" not as a scenic resource for the edification of visitors, but instead as a mosaic of ecosystems. And from an environmentalist perspective, even backpackers constituted a potential threat to Rocky's ecology. The "establishment of a useable trail system plus additional use by protection personnel in the back country [sic]," the committee cautioned, "will dictate the insistence that trail hikers and particularly horse parties must stay on established trails." The report went on to sound clear warning about the potential dangers of Mission 66-style planning: "New trail construction in an unmodified wilderness," the committee proclaimed, "will not be considered a solution for relieving visitor congestion in already modified wilderness no matter how attractive it may appear initially."¹⁸⁴ The shift in Park priorities epitomized by the Backpacking Committee's recommendations adopted material form: henceforth, all backcountry trails in the Kawuneeche would be built to an 18-inch standard—too narrow for equestrian travel. The heyday of pack trips and dude ranch rides had passed. Backpacking and backcountry were fast becoming synonymous.

In the ensuing years, the NPS intensified its efforts to rationalize Rocky's trail system. Employees blocked false routes, enlisted improved technologies to identify and map trails, finally built some long-promised connecting trails and loop routes, and constructed additional trailheads on the former sites of Green Mountain Ranch, Holzwarth's Never Summer Ranch, and Phantom Valley Ranch. Thanks in part to such improvements, the 1976 *Master Plan* for the Park noted that "foot trail use and backcountry use is growing at a more rapid rate than that of other park uses." The plan also singled out equestrianism as a problem in need of solutions: "[H]orse use in areas of heavy wear—near stables and takeoff points, on steep grades, and on

¹⁸⁴ Ibid., 48.

dead-end trails—must be reduced.” Toward this end, the plan advocated “the removal of interior stables [i.e. stables located within the Park’s boundaries and operated by concessionaires]” and “improved trail maintenance and reconstruction.”¹⁸⁵ Though only partially implemented, these new policies combined with the Park’s near-total elimination of dude ranches and guest ranches to take still more riders off of Park trails.

Six years later, park administrators engaged in an extensive evaluation of the entire trail system, with input from outside experts and park visitors. The new plan that resulted from this 1982 study sought to “accommodate increased use, alleviate conflicts between hikers and horseback riders, improve trailheads, and reduce impacts on the natural and cultural environment.”¹⁸⁶ In the wake of the plan, the NPS funded several studies on the ecological impact of trails in Rocky Mountain. One Park study, for instance, validated the rather obvious hypothesis that horse traffic on trails produced a variety of erosional impacts which varied mostly with trail characteristics, surrounding landforms and terrain, and the interaction of climatic conditions with the trail and its environs, while another explored the roles trails played as habitats facilitating species movement.¹⁸⁷

Although these studies improved the ability of administrators to gauge the potential environmental impacts of trails and trail users, Rocky’s resolve to improve park trails foundered during the Reagan administration. In 1992, the Park’s “Statement for Management” glumly claimed that “The ability to maintain trails has fallen drastically behind the standards of the 1982 Trail Plan. Problems existing on many of the 355 miles of park trails include braiding,

¹⁸⁵ National Park Service, *Rocky Mountain National Park: Final Master Plan*, 24.

¹⁸⁶ Rocky Mountain National Park, *Trail Plan* (n.p.: n.p., 1982), 1.

¹⁸⁷ Rebecca M. Summer, “Geomorphic Impacts of Horse Traffic on Montane Landforms,” *Journal of Soil and Water Conservation* 41 (1986), 126-28; Mary Benniger-Traux, John L. Vankat, and Robert L. Schaefer, “Trail Corridors as Habitat and Conduits for Movement of Plant Species in Rocky Mountain National Park, Colorado, USA,” *Landscape Ecology* 6 (1992), 269-78.

severe erosion, broken water bars, and deteriorating bridges. Much of the increase in trail deterioration is linked to an increase in horse use [after a temporary decline, equestrianism again increased in popularity], and decrease in trail maintenance crews."¹⁸⁸ Meanwhile, the harsh valley environment continued to take an unrelenting toll on the Park's trails.

Seeing the Forest for the Trees: Bark Beetles, Wildfire, and Forest Health

Whether they mounted horses, saddled themselves with backpacks, or traveled light, the visitors who plied the Kawuneeche's trails usually looked forward to rekindling an American connection to the woods. The routes on which they walked or rode may have begun in the clearings around operating or defunct dude ranches, and several led to tundra expanses and high mountain peaks. Yet trees remained the heart of the Kawuneeche experience for trail users. The forests of Rocky's west side were no less important to visitors who hewed to Trail Ridge Road, of course. For much of Rocky Mountain National Park's history, travelers and Park officials alike were largely able to take the valley's forests for granted, though the Park Service and Forest Service engaged in various forms of so-called "protection" work, with wildfire, insect pests, and Park visitors themselves the main objects of attention.

The days of glibly assuming that Colorado's forests would permanently endure, though, are long gone. Today in the Kawuneeche Valley, as in most every stretch of the Rocky Mountains, one simply cannot fail to appreciate the impact that tiny, match-head-sized beetles of the genus *Dendroctonus*—Latin for "tree killer"—are having on coniferous forests, with the subalpine stretches of lodgepole pine hit particularly hard.¹⁸⁹ Along the Colorado River

¹⁸⁸ National Park Service, *Statement for Management, Rocky Mountain National Park* (n.p.: National Park Service, 1992), 14

¹⁸⁹ Thomas C. Harrington, "Ecology and Evolution of Mycophagous Bark Beetles and Their Fungal Partners," in *Ecological and Evolutionary Advances in Insect-Fungal Associations*, F. E. Vega

headwaters as in most other parts of Colorado's high country, lodgepole forests are well into the second decade of the most severe bark beetle epidemic in recorded history.

Understandably, the sight of so many dead and dying trees has raised widespread alarm. To some, the outbreak of mountain pine beetle (*Dendroctonus ponderosae*, once known as the Black Hills pine beetle or Rocky Mountain pine beetle, but now called simply the mountain pine beetle and often spoken of in scientific and policy circles using the acronym MPB) seems to represent a kind of forest holocaust—a horrific consequence of human ignorance, greed, and evil. The outpouring of scientific research generated by the epidemic, however, paints rather a different picture—one in which the outbreak represents both the enduring power of nature to upset human designs in the course of pursuing its own inexorable dictates, and the ever-intensifying fear that human-caused changes to the Earth's biogeophysical systems are already initiating ecological changes of unprecedented speed, extent, and character.

Several species of *Dendroctonus* have inhabited Colorado's forests since time immemorial.¹⁹⁰ Different species of this order have evolved to inhabit and feed upon different kinds of conifers. But each species pursues a roughly similar life cycle. Beetle eggs hatch under the bark of infected trees. During the larval and pupal stages, *Dendroctonus* feeds on the tree's phloem. Having reached adulthood, the beetles eat their way out of the tree, fly up to a mile away (or perhaps farther if winds are strong), alight on new trees, and bore a tunnel into the bark.

and M. Blackwell, eds. (New York: Oxford University Press, 2005), online version at <http://www.public.iastate.edu/~tcharrin/Mycophagy4%2009.pdf>, n.p.

¹⁹⁰ Bark beetles and the fungi with which they associate date back at least to the Mesozoic. Scott DiGuistini, Ye Wang, Nancy Y. Liao, Greg Taylor, Philippe Tanguay, Nicolas Feau, Bernard Henrissat, Simon K. Chan, Uljana Hesse-Orce, Sepideh Massoumi Alamouti, Clement K. M. Tsui, Roderick T. Docking, Anthony Levasseur, Sajeet Haridas, Gordon Robertson, Inanc Birol, Robert A. Holt, Marco A. Marra, Richard C. Hamelin, R. Martin Hirst, Steven J.M. Jones, Jörg Bohlmann, and Colette Breuil, "Genome and Transcriptome Analyses of the Mountain Pine Beetle-Fungal Symbiont *Grosmannia clavigera*, a Lodgepole Pine Pathogen," *Proceedings of the National Academy of Sciences of the United States of America* 108 (2011), 2504.

The beetles next dig so-called “galleries” or tunnels in the trees’ phloem, where they lay the eggs from which a new generation of *Dendroctonus* will emerge. As they burrow, the insects introduce blue stain fungus that, in concert with the galleries dug by beetles, kill the tree by blocking the flow of water and sap through its tissues.¹⁹¹ In the Kawuneeche Valley, the two most important bark beetle species have probably been *Dendroctonus ponderosae* and *D. rufipennis*, once known as the “Engelmann spruce beetle” because of its proclivity for that subalpine species but now widely known simply as spruce beetle. Like other varieties of *Dendroctonus*, these species usually remain at endemic levels; periodically, though, their numbers explode, for reasons that are still not fully understood.

Mentions of bark beetles in early historic documents on the Kawuneeche are rare to non-existent. Together with the beetles’ overweening preference for trees larger than 6 inches in diameter at breast height and the Kawuneeche’s history of extensive stand-replacing fires between the 1850s and 1900s, the lack of documentation on early beetle outbreaks strongly suggests that beetles probably remained endemic in the Kawuneeche between the late nineteenth and early twentieth century, though heavily localized epidemics may have occurred.¹⁹²

By the time the first clear references to mountain pine beetle on the west side of Rocky Mountain National Park appear, mountain pine beetles had already ravaged western forests in a succession of outbreaks. The first of these began in the Black Hills in the late 1890s; in 1901, Gifford Pinchot, head of the federal forest reserves, dispatched Andrew Delmar Hopkins to

¹⁹¹ The primary fungus is *Grosmannia clavigera*, but *Ophiostoma* is also present. Ibid., 2055.

¹⁹² On MPB’s preference for trees above 6 inches diameter at breast height (dbh), see J. A. Beal, “The Black Hills Beetle, a Serious Enemy of Rocky Mountain Pines,” U.S. Department of Agriculture, Farmers’ Bulletin No. 1824 (Washington, D.C.: U.S. G.P.O., 1939), 2; and Kellen N. Nelson, “The Effect of Mountain Pine Beetle Caused Mortality on Subalpine Forest Stand and Landscape Structure in Rocky Mountain National Park, CO” (master’s thesis, Colorado State University, 2009), 11. Nelson goes on to point out that over the course of the current MPB outbreak in the Kawuneeche Valley, the beetles have grown less selective; once their preferred large trees (those greater than 25 cm dbh) have been essentially infected, they have begun to opt for smaller-diameter trees of 15-25 cm dbh (14-15, 19).

investigate. Hopkins, a self-taught scientist whose studies of southern pine beetle (*Dendroctonus frontalis*) had earned widespread praise, was eventually hailed as the “father of North American entomology.”¹⁹³ In 1902, Pinchot and Hopkins began to receive reports from Colorado that the mountain pine beetle was killing ponderosa stands in Park County, west of Denver. By 1905, the epidemic had spread widely; Hopkins found mountain pine beetle killing ponderosas throughout the foothills north and west of Colorado Springs. The outbreak evidently continued for several more years, despite the efforts of foresters to combat the beetles by cutting down infected trees, then either stripping them of their bark and sending the peeled logs to be milled, or burning them in large piles when weather and fuel conditions were suitable.¹⁹⁴

Bark beetles seem to have entered into a phase of relative quiescence in Colorado by 1908 or so. Elsewhere in the West, though, the insects continued to cause problems. A serious outbreak of mountain pine beetle hit the Kaibab Plateau from 1917 to 1925; meanwhile, the western pine beetle (*Dendroctonus brevicomis*) destroyed large swaths of forest in California and Oregon in the early 1920s. An article in *American Forestry* on the latter crisis employed military metaphors to portray a forest under siege by insect antagonists; in the process, it offers important insights about how Americans made sense of bark beetle outbreaks prior to the dawn of ecology.

In “War on the Pine Beetle: How Men and Money Are Fighting to Save Our Western Pine from the Beetle Hordes,” F. P. Keene lamented: “As if the annual midsummer battles with timber fires were not enough, this wily trencher has engaged the forest forces in a new line of

¹⁹³ On Hopkins’s title, see Andrew Nikiforuk, *Empire of the Beetle: How Human Folly and a Tiny Bug Are Killing North America’s Great Forests* (Vancouver, B.C.: Greystone Books, 2011), 56. On these events, see Malcolm M. Furniss, *A History of Forest Entomology in the Intermountain and Rocky Mountain Areas, 1901-1982*, General Technical Report RMRS-GTR-195 (Fort Collins, Colo.: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, 2007), 1-3.

¹⁹⁴ *Ibid.*, 1-3.

attack to protect the virgin stands of pine against destruction and waste.” Were the pest “a new enemy,” Keene believed,

the newspapers would herald it with front-page headlines that would make every pine-owner quake in contemplation of the disaster about to befall him; but, being a native-born American pest, with full citizenship papers, its residence in our forests has been taken as a matter of course, an undesirable neighbor but a homesteader nevertheless. Like other undesirable native citizens, we cannot extradite them, much as we might desire to do so, but must make plans to prevent them from causing more than a minimum of damage to our natural resources.

After likening western pine beetles to unruly Americans, Keene went on to describe an array of measures that were proving effective at controlling these undesirables. He also noted a trenchant irony: using logging and other techniques, “artificially, a balance of nature is restored.”¹⁹⁵

An outbreak of mountain pine beetle on the Roosevelt National Forest in northern Colorado began in 1923, the same year in which Keene wrote. The insects “killed an estimated total of 100,000 trees,” a government report later claimed, “but was successfully brought under control in 1930.”¹⁹⁶ The apparent success of foresters in limiting beetle epidemics seemed consistent with the notion that conservationists could use science and hard work to restore nature’s balance.

¹⁹⁵ F. P. Keene, “War on the Pine Beetle: How Men and Money Are Fighting to Save Our Western Pine from the Beetle Hordes,” *American Forestry* (Nov. 1923), 689-91.

¹⁹⁶ Beal, “Black Hills Beetle,” 1. Beal particularly credited “prompt control measures applied to small incipient infestations” with preventing large outbreaks (2). Similarly, Civilian Conservation Corps crews gained the upper hand on mountain pine beetles in portions of Denver’s mountain park system in the late 1930s. See, for instance, “Destruction of Trees by Beetles Is Halted in Mountain Forests,” *Monitor*, Aug. 12, 1938, clipping in DPL clippings file: “Insects: Beetles.”

Then one blustery day in the summer of 1939, an unlikely chain of events propelled the worst *Dendroctonus* outbreak Colorado had yet experienced. Almost twelve years later, a snap of brutally cold weather produced widespread beetle mortality throughout Colorado's forests. By 1952, the epidemic was over, but not before quashing the optimism expressed in a 1937 U.S. Department of Agriculture Bureau of Entomology and Plant Quarantine report on "The Black Hills Beetle," which had confidently predicted that "The early recognition and prompt treatment of incipient epidemics will undoubtedly prevent the development of infestations which would otherwise become serious."¹⁹⁷ The spruce beetle outbreak of 1939 to 1952 belied rosy prognostications of human control over forest pests; in the process, it foreshadowed an ominous future in which *Dendroctonus*, despite active and elaborate human responses, would tear through Rocky Mountain forests as if nothing were standing in its way.

On June 15, 1939, high winds roared across Colorado's western slope. The winds fueled large wildfires; they also blew down hundreds of thousands of acres of forest. As a newspaper writer later phrased it, "the storm had given the beetles their chance."¹⁹⁸ The outbreak of *Dendroctonus rufipennis* began in the White River National Forest, but the contagion soon spread throughout the Western Slope. Englemann spruce stands of the subalpine zone were particularly hard hit.¹⁹⁹ The spruce beetle, an endemic species that had not yet caused any known epidemics, "suddenly developed into a rampant scourge of the first order," readers of the *Rocky Mountain News Empire Magazine* learned in a 1946 article, "Blitzkrieg of Beetles

¹⁹⁷ J. A. Beal, "The Black Hills Beetle," U.S. Department of Agriculture, Bureau of Entomology and Plant Quarantine Report E-403 (Feb., 1937), typescript in DPL clippings file, "Insects. Beetles," p. 5.

¹⁹⁸ Elvon L. Howe, "Blitzkrieg of Beetles Ravages Colorado Spruce," *Rocky Mountain News Empire Magazine* (Sept. 29, 1946), 3, 7.

¹⁹⁹ Scientists later estimated that more than 290,000 hectares had been affected within the White River. Thomas T. Veblen, Keith S. Hadley, Marion S. Reid, and Alan J. Rebertus, "The Response of Subalpine Forests to Spruce Beetle Outbreak in Colorado," *Ecology* 72 (1991), 214, 217.

Ravages Colorado Spruce.”²⁰⁰ Three years later, the “rampant scourge” continued to spread, but now the same publication tweaked its metaphors: the “Blitzkrieg” had evolved—or perhaps devolved—into a “Blitz of Beetles” in which “Millions of Colorado Spruce Trees Have Been Killed by the Brown Gangsters.”²⁰¹ By 1950, some authorities estimated that the epidemic might cause upwards of \$100 million in losses if it continued unchecked.²⁰²

The National Park Service eyed the outbreak nervously. In a memorandum to rangers at Rocky Mountain, the Service’s J. Barton Herschler warned: “An extremely serious bark beetle epidemic has been reported in Western Colorado. The most serious outbreaks, so far reported, are on the White River, Grand Mesa and Gunnison Forests, with lesser ones observed on the Routt. The insect ... is attacking mature Engelmann spruce stands.” Unfortunately, Herschler claimed, it was “extremely difficult to detect the work of this beetle,” and he begged “the diligence of all park rangers ... in watching for the appearance of this insect in the forests of this park.”²⁰³ Both spruce beetle and mountain pine beetle reached Rocky in the late 1940s, leading the NPS to treat infected trees.²⁰⁴

²⁰⁰ Howe, “Blitzkrieg of Beetles Ravages Colorado Spruce.” This is not to say that *D. rufipennis* had not reached epidemic proportions, but that it was not known to do so. Forest ecologists have found evidence that the species had killed large numbers of trees in the mid-nineteenth-century. See William L. Baker and Thomas T. Veblen, “Spruce Beetles and Fires in the Nineteenth Century Subalpine Forests of Western Colorado,” *Arctic and Alpine Research* 22 (1990), 65-80.

²⁰¹ Ben Funk. “Blitz of Beetles: Millions of Colorado Spruce Trees Have Been Killed by the Brown Gangsters,” *Rocky Mountain News Empire Magazine*, Nov. 27, 1949, 5. Despite the mention of the color “brown,” this account made little other direct references to race; it emphasized, in short, the criminality of the bugs more than their “brownness.”

²⁰² “\$100 Million Loss Seen in State If Spruce Beetle Fund Is Held Up,” *Denver Post*, May 2, 1950, p. 40. A later estimate pegged the damage at \$640 million; “Spruce Loss Set at \$640,000,000,” June 27, 1951, p. 48.

²⁰³ J. Barton Herschler memorandum to all park rangers, Jan. 9, 1945, folder 207-13: “Forestry Reports,” box 18, Rocky Mountain National Park General Correspondence Files, NARA-Denver.

²⁰⁴ See, for instance, “Annual Forestry Report, 1948,” Jan. 3, 1949, *ibid.*, and “Rocky Mountain National Park 1951 Annual Forestry Report,” Jan. 21, 1952,” *ibid.*

Beyond the Park, the spruce beetle “blitzkrieg” intensified, leading Congress to appropriate \$2 million to fund an enormous control effort.²⁰⁵ As a writer for the U.S. Forest Service’s Division of Information and Education aptly put it, “the operation was as complicated as preparing for a real war.” During the summer of 1950, well over 1,000 forest workers bulldozed at least 150 miles of new roads through Colorado’s subalpine forests; they then proceeded to use these new roads to transport into the high country *each day* up to 15,000 5-gallon cans of insecticide, which workers then mixed with fuel oil and sprayed on infected trees.²⁰⁶ The effort was typical of other crusades against insect “pests” in mid-twentieth-century America, with the bugs conceived of as a hostile force waging war against the nation and combated via enormous quantities of newly invented chemical pesticides, with the federal government footing the bill.²⁰⁷ In the 1920s, foresters had spoken of employing artificial means to restore nature’s balance; by the 1940s, they sought to force spruce beetles into unconditional surrender.

In November of 1951, after years of grim prognostication, the *Rocky Mountain News* at last heralded good news in the fight against spruce beetles: “The beetle that for years has been laying waste Colorado’s forests is on its last legs, the U.S. Forest Service jubilantly reported yesterday.” The spruce beetle, the *News* reassured readers, would soon turn “from a major threat to a minor pest.”²⁰⁸ Indeed, by August of 1952, a story in the *Denver Post* reported that the

²⁰⁵ “Forest Service Trims Spruce Bark Beetle Plan to Fit Reduced Appropriation,” *Denver Post*, June 24, 1950, p. 16; “\$2 million Voted Colorado Beetle War,” June 27, 1950, p. 12.

²⁰⁶ Statistics from Duncan Scott, “Battle of Beetles: U.S. Fights All-Out War to Save Tall Timber,” clipping in DPL clippings file, “Insects. Beetles,”

²⁰⁷ Edmund P. Russell III, *War and Nature: Fighting Humans and Insects with Chemicals from World War I to Silent Spring* (New York: Cambridge University Press, 2001) and Joshua Blu Buh, *Fire Ant Wars: Nature, Science, and Public Policy in Twentieth-Century America* (Chicago: University of Chicago Press, 2004), chs. 1 and 2.

²⁰⁸ Joe Gaskie, “Spruce Beetles Fading: One More Season Needed to Control Pest,” *Rocky Mountain News* Nov. 4, 1951.

spruce beetles' "blitzkrieg" had at last gone the way of Hitler's Panzer units; its headline was brilliantly succinct: "Battle Won."²⁰⁹

The most important cause for the rapid decline of *D. rufipennis*, though, was not the elaborate campaign of road-cutting and tree-spraying that the federal government had masterminded. Instead, as contemporaries well understood, a beetle outbreak that started largely because of an extreme weather event in the summer of 1939 ended because of another extreme weather event—a blast of intensely cold weather in February of 1950 that had sent the mercury plummeting throughout the Colorado high country. Many stations reported record minimum temperatures of -40 degrees Fahrenheit or colder. The Kawuneeche Valley experienced the deep freeze along with the rest of the Western Slope, with temperatures plummeting to -20 and even -30 degrees below zero F.²¹⁰

Foresters estimated that the arctic cold had killed about 85% of the beetles; woodpeckers, whose populations had grown over the course of preceding years because of the sharp upswing in the insects on which they fed, consumed many of those beetles fortunate enough to have survived the sub-zero temperatures.²¹¹ "The severe cold of last winter," as Rocky Mountain National Park's 1951 Annual Forestry Report claimed, "apparently reduced the dendroctonus infestation in Ponderosa pine and Douglas-fir to the endemic stage [apparently *D. ponderosae* was also afflicting Park trees]," and presumably the same held true for spruce beetle in Rocky's Engelmann spruce forests. "No control was necessary during the summer of 1951," the report

²⁰⁹ "Battle Won, \$10 Million Saved," *Denver Post*, Aug. 3, 1952, p. 1a.

²¹⁰ See climatic data for Grand Lake stations, early February, 1950, in daily data section of Colorado Climate Center online databases, at: <http://ccc.atmos.colostate.edu/> (accessed September 15, 2011).

²¹¹ Gaskie, "Spruce Beetles Fading."

declared, “the first time in a number of years that not a single tree was treated for insect control.”²¹²

Dendroctonus remained largely in abeyance in most stretches of the Colorado Rockies for much of the ensuing quarter century. A 1963 *Denver Post* article offered a partial explanation for this downturn. After two years in which mountain pine beetle populations seemed to be increasing, “This winter’s bitterly cold weather in many parts of Colorado,” the newspaper reported, “ha[d] brought about a substantial kill of vicious bark beetles that have ravaged thousands of acres of beautiful and valuable Colorado forest areas in past years and have threatened new infestations.”²¹³ Humans had failed to control *Dendroctonus*, but cold winters managed to keep the pests at bay.

Bark beetle populations remained low over the next decade, a situation that evidently preserved some illusion of human control.²¹⁴ The absence of major *Dendroctonus* outbreaks, though, more likely reflected both the effects of cold snaps, and the cyclical nature of insect populations that periodically destroy huge swaths of the trees on which their life cycle depends. By 1965, the cycle in some forests had turned again; that year, mountain pine beetles had begun to afflict ponderosa pines along Colorado’s Front Range, but this slow-moving epidemic prompted only limited notice or concern prior to about 1972.²¹⁵

²¹² “Rocky Mountain National Park 1951 Annual Forestry Report.”

²¹³ Bert Hanna, “Zero Cold Kills Off Beetles,” *Denver Post*, Jan. 25, 1963, p. 13.

²¹⁴ For stories on efforts to combat MPB in *Denver Post*, April 30, 1964, p. 30 and July 13, 1966, p. 3, as well as January 10, 1971, p. 19, 22.

²¹⁵ On start in 1960s, see Richard G. Walsh and John P. Olienyk, “Recreation Demand Effects of Mountain Pine Beetle Damage to the Quality of Forest Recreation Resources in the Colorado Front Range,” preliminary draft (Fort Collins, Colo.: Department of Economics, Colorado State University, June, 1981), 1; Robert Tully, “New Pine Beetle Breed Emerging in High Country,” *Denver Post*, June 1, 1982, p. 5b.

Thereafter, the number of trees infected climbed exponentially. By the late 1970s, mountain pine beetle was killing almost 2 million trees each year in Colorado.²¹⁶ The MPB outbreak of 1965-1986 presented what appears in retrospect to have been something of a dress rehearsal for the epidemic that presently afflicts tens of millions of acres of land across the North American West.²¹⁷

Though the outbreak began in ponderosa stands on the eastern slope of the Front Range, *Dendroctonus ponderosae* eventually spread to lodgepole pines of the subalpine zone on both sides of the Continental Divide. Some entomologists went so far as to attribute the spread of an insect previously identified largely with ponderosa forests (it had been named *D. ponderosae* for good reason) to lodgepole pine as the result of an unprecedented evolutionary development: “A genetically different, high-country breed,” *Denver Post* reporter Robert Tully claimed in a 1982 story, “is emerging in timber near Dillon and Eagle.”²¹⁸ In retrospect, the notion that mountain pine beetles had mutated seems unlikely; researchers now know that the insects have long infested lodgepole stands. The hypothesis that a bug that foresters believed they could control had morphed into a monstrous new “breed,” though invalid from a biological standpoint, nonetheless suggests that the beetle outbreak had forced a critical shift of perception by the early 1980s: the tree-killers were on the loose, and no one knew how to stop them.

By 1983, MPB had spread to the Granby area, afflicting 50,000 trees that year, and hundreds of thousands more in subsequent seasons.²¹⁹ “By 1984, at the infestation’s peak,” *Rocky Mountain News* reporter Gary Gerhardt later wrote, “331,000 acres of lodgepole pine were

²¹⁶ Gary Gerhardt, “Time Is Critical to Stem Epidemic of Pine Beetle,” *Rocky Mountain News*, June 27, 1999, p. 32a.

²¹⁷ On the outbreak’s duration, see Gary Gerhardt, “Beetles Make a Comeback: Mountain Pine Beetle Infesting State’s Trees,” *Rocky Mountain News*, Sept. 5, 1996, p. 24a.

²¹⁸ Tully, “New Pine Beetle Breed Emerging in High Country.”

²¹⁹ *Rocky Mountain News*, May 10, 1983, p. 39.

infested with mountain pine beetles.”²²⁰ Grand County was heavily afflicted. It is unclear, however, how many trees in the Kawuneeche Valley died in consequence before the outbreak finally ended in 1986.²²¹

News accounts and scientific reports on the 1965-1986 epidemic tended to use four main storylines to make sense of the mountain pine beetle outbreak: as a tragedy that placed the mountain forests Coloradans treasured at grave risk; as a problem that could only be solved through scientific research and human effort; as a natural process that played an essential role in forest regeneration; and as an unintended consequence of man’s misguided attempts to manage Rocky Mountain forests over the course of the twentieth century. The same *Denver Post* article that alerted readers to the possibility that a “New Pine Beetle Breed” had emerged, to cite just one example, drew upon all four of these stories. “Mountain residents have feared living in a brown forest for a few years,” reporter Robert Tully noted. For this reason, and “because ... of recreation and tourism uses, U.S. and Colorado forest services are attempting to manage the forests by removing infested trees before the beetles spread.” Along the eastern slope of the Front Range, hundreds of thousands of infected trees had been cut down over the preceding decade. So-called “high-value trees”—seen as essential living complements to the mountain homes that were making Colorado a global hotspot of exurban and second-home development—were sprayed with Sevin and other chemicals to protect them against beetles. A \$2.7 million government treatment project, meanwhile, would bankroll the cutting of 125,000 lodgepole pines in Summit and Eagle Counties (up from 30,000 trees the previous summer), which would then be “either fumigated or chopped into firewood.”²²²

²²⁰ Gerhardt, “Beetles Make a Comeback.”

²²¹ “Man and Nature Team Up to Defeat Mountain Pine Beetle in 1986,” *Rocky Mountain News*, Nov. 4, 1986, p. 14.

²²² Tully, “New Pine Beetle Breed Emerging in High Country.”

A state forester presented Tully with a third take on the epidemic: not as a tragedy or as a problem in need of a solution, but instead as an integral part of self-regulating natural processes. “Something needs to clear older trees away,” Bruce Colter told the *Post* reporter, “and the insects are doing it.” While some authorities viewed the outbreak as part of a cycle in which nature made way for new growth, others portrayed the mountain pine beetle outbreak in a fourth and final way: as evidence that human activities had profoundly altered the natural world. Forester Richard Selle, for instance, called “the surge ... the result of an aging forest. Many Summit County lodgepoles are 100 years old,” Selle noted. Selle’s implication was clear to anyone who understood the region’s history: a combination of two human activities—the logging and forest fires that had devastated subalpine forests around Breckenridge, Redcliff, and other late-nineteenth-century mining centers, and the policy of fire suppression instituted on federal forest reserves in the early decades of the twentieth century—had together generated a forest-health crisis of catastrophic proportions.²²³

Two years after Tully’s piece outlined the four primary narratives both experts and the general public drew upon to understand the insect epidemic responsible for killing hundreds of thousands of acres of Colorado’s prized pine forests, another *Denver Post* reporter, Gary Schmitz, considered how contradictions between these storylines complicated federal responses to the outbreak. “We know what to do biologically eliminate the pine beetle,” Dick Woodrow, supervisor of White River National Forest, claimed. “We are less certain of the politics of what we have to do.” The core political problem, as Schmitz saw it, was the distaste of Coloradans for logging. “There are few states where cutting trees is a more sensitive issue than it is in Colorado,” a state that had outgrown its frontier roots to become a major center of lifestyle-

²²³ Ibid. The final of these four points is developed particularly clearly in Gary Schmitz, “‘Politics’ of Pine Beetle Eradication Worrying Foresters,” *Denver Post*, Aug. 27, 1984, p. 8a.

oriented suburbanization and recreational development. The state's pine forests, Schmitz noted, were "prized for their recreational and aesthetic values," not for their economic worth. "We're not a tree-farm state by any means," Woodrow regretfully admitted.²²⁴

And yet the only way to treat the epidemic, Woodrow and many other experts agreed, was to fell infected trees. Given the density of most lodgepole forests and the thoroughness with which *Dendroctonus* was attacking the conifers, successful control of the epidemic through logging would require that huge swaths of forest be clear-cut. As Schmitz wrote in 1984, the gap between public opposition to logging and the compelling need to clear out trees afflicted by beetles and blue stain fungus yawned especially widely because of larger conflicts between the timber industry and environmentalists during the Reagan era. Some within the USFS, a service which the president had overhauled to reflect his own anti-environmentalist leanings, even envisioned using the beetle outbreak as a kind of wedge to increase acceptance of logging among Coloradans. "What we're really talking about," Woodrow claimed, "is the whole issue of forest management, and not just this project." As Woodrow admitted, "management, in many cases, means harvesting trees."²²⁵

Another USFS official, Jim Beavers of the agency's Rocky Mountain regional office, was even more frank. "To be honest, without the pine beetle, we wouldn't be able to get to the management levels we hope to in the future." As Schmitz learned, "the agency's message holds that Colorado's forests must be selectively logged if they are to remain healthy." Too many forests in the Rockies, this line of reasoning held, were "overly mature. Because of this, the trees are weak and susceptible to epidemics." Nearly a century after indiscriminate logging and "man-caused forest fires" had torn through the mountains, "Foresters say Colorado's forests do not

²²⁴ Ibid.

²²⁵ Ibid.

have enough diversity in either age or species to ensure their continued health.”²²⁶ Only modern logging conducted in accordance with scientific forestry, the USFS claimed, could restore the forests’ vitality.²²⁷ The Environmental Protection Agency had recently banned ethylene dibromide, a pesticide that foresters had often used against *Dendroctonus*.²²⁸ Meanwhile, the Reagan administration, as Schmitz noted, favored an emphasis on “more ‘productive’ uses under the Forest Service’s ‘multiple use concept’ than did administrations during the 1970s.”²²⁹

Foresters wanted to convince the public that logging provided a critical tool for managing Rocky Mountain forests--both to “treat” the present MPB epidemic, and to prevent future infestations. Not a few invoked the specter of wildfire to help them make this case. “They warn,” Schmitz noted ominously, “of an unprecedented forest fire danger if dead and dying trees are not removed. ‘It doesn’t take much imagination,’” a USFS spokesman told the reporter, “to envision a wild fire tearing through a bone-dry forest that was killed by pine beetles and burning into Vail or some other nearby resort.”²³⁰ The commonsensical—and, it now appears, discredited—assumption that dead trees would increase the likelihood of forest fires kindled an

²²⁶ Ibid.

²²⁷ As environmental historian Nancy Langston has shown, such thinking had a long history within the USFS. *Forest Dreams, Forest Nightmares: The Paradox of Old Growth in the Inland West* (Seattle: University of Washington Press, 1995).

²²⁸ U.S. Environmental Protection Agency, “E.P.A. Acts to Ban EDB Pesticide,” press release, Sept. 30, 1983, online at: <http://www.epa.gov/history/topics/legal/02.html> (accessed Sept. 21, 2011); for regional reaction to the ban, see “State Forest Service Scraps Plans to Use EDB for Pine Beetle Control,” *Rocky Mountain News*, March 3, 1984, p. 3; “Anne Selle, Head of State’s Beetle Treatment Program in Summit Co. Resigns to Protest Use of EDB,” *Rocky Mountain News*, April 14, 1984, p. 16.

²²⁹ Schmitz, “‘Politics’ of Pine Beetle Eradication Worrying Foresters.” Schmitz noted, with little apparent irony, that the USFS’s conception of “productive” use did not necessarily require that it turn a profit. “Although the agency hopes the sales will provide a return to the federal treasury and create jobs in private industry, it said those are not its prime motives. ... ‘Making money is not the only reason we have a timber sale,’” Beavers told him. “‘There are many benefits beyond simple economies, and when these are factored in, these sales do make a lot of sense.’” These factors included “faster regeneration of forests, enhanced wildlife habitat and better water yield.”

²³⁰ Ibid.

almost unspeakable fear: Frankenstein-like forests fundamentally disfigured by human action (and, in the case of logging, inaction) could lash back at their creators with furious vengeance.²³¹

The rapid decline of MPB populations in 1986 truncated the search for solutions to an epidemic that exposed seemingly irreconcilable ecological, economic, political, and cultural imperatives amongst forest stakeholders in the Colorado Rockies. *Dendroctonus*, however, remained poised to strike again. By the late 1990s, the creatures were once again on the fly. The *Denver Post* alarmed readers in September, 1996 with news that “The dreaded mountain pine beetle has returned.” By 1997, the insects had killed some 11,600 trees in the central Front Range; ponderosa pine forests in the foothills of the Front Range were afflicted first, but State Entomologist David Leatherman reported that year that the outbreak was “already reaching epidemic status” in the lodgepole forests of the Vail Valley. “The writing is on the wall. Another epidemic is starting.”²³² A forest expert with the Rocky Mountain Forest and Range Experiment Station in Fort Collins told a reporter that “This is a West-side phenomenon, from here to the West Coast.... And quite frankly, it’s overwhelming.”²³³

Fourteen years later, this “overwhelming” outbreak rolls on with little signs of abating. As the *New York Times* reported in 2008, “From New Mexico to British Columbia, the region’s signature pine forests are succumbing to a huge infestation of mountain pine beetles that are turning a blanket of green forest into a blanket of rust red.” More than 4 million acres of woodland in Colorado and southern Wyoming had been affected by 2010.²³⁴ Foresters have

²³¹ See references below to recent research on MPB and wildfire.

²³² Gerhardt, “Beetles Make a Comeback”; Gary Gerhardt, “Time Is Critical to Stem Epidemic of Pine Beetle,” *Rocky Mountain News*, June 27, 1999, p. 32a; and Guy Kelly, “Return of the Pine Beetle: Epidemic Starting, Say Officials, with Trees from Vail Valley to South Park Infested,” *Rocky Mountain News*, Oct. 26, 1997, p. 20a.

²³³ Ibid.

²³⁴ USFS Rocky Mountain Region, “Aerial Survey Highlights for 2010,” http://www.fs.usda.gov/wps/portal/fsinternet!/ut/p/c5/04_SB8K8xLLM9MSSzPy8xBz9CP0os3gjAwhwt

declared it “the largest known insect infestation in the history of North America”—a crisis of truly continental magnitude that, according to recent estimates, has killed more than 70,000 square miles of woodland in the U.S. and Canada, with lodgepole-pine forests particularly hard hit. Recently, MPB even seems to have spread to jack pines (*Pinus banksiana*) in northern Alberta, raising fears that the beetles might spread throughout North America’s pine forests.²³⁵

The epidemic arrived in the Kawuneeche Valley around 2001. Winds helped carry large numbers of the insects into the Colorado River headwaters from three areas infested in the late 1990s: Routt National Forest north of RMNP, Willow Creek Pass to the Park’s west, and Middle Park via Grand Lake. The southwestern portion of the valley experienced the greatest initial impact; the insects then moved north and northeast. The epidemic spread quite gradually until about 2005, then accelerated rapidly. The infestation peaked in the Kawuneeche in 2007 or 2008; mountain pine beetle presently seems to have returned to pre-outbreak levels.²³⁶

[DDw9_AI8zPyhQoYAOUjMeXDfODy-HWHg-zDrx8kb4ADOBro-3nk56bqF-RGGGSZOCaCapi8eX8!/d13/d3/L2dJQSEvUUt3QS9ZQnZ3LzZfMjAwMDAwMDBBODBPSEhWTjJNMDAwMDAwMDA!/?navtype=BROWSEBYSUBJECT&cid=stelprdb5253133&navid=091000000000000&pnavid=null&ss=1102&position=Not%20Yet%20Determined.Html&ttype=detail&pname=Region%20-%20Home](http://www.nytimes.com/2008/11/18/science/18trees.html) (accessed Sept. 19, 2011).

²³⁵ Jim Robbins, “Bark Beetles Kill Millions of Acres of Trees in West,” *New York Times*, Nov. 18, 2008, online at <http://www.nytimes.com/2008/11/18/science/18trees.html> (accessed Sept. 16, 2011); Nathan Rice, “Western Pine Beetles Munch Eastward,” *High Country News*, April 22, 2011, online at <http://www.hcn.org/blogs/goat/western-pine-beetle-munches-eastward> (accessed Sept. 19, 2011); Catherine I. Cullingham, Janice E. K. Cooke, Sophie Dang, Corey S. Davis, Barry J. Cooke and David W. Coltman, “Mountain Pine Beetle Host-Range Expansion Threatens the Boreal Forest,” *Molecular Ecology* 20 (2011), 2157-71. A more measured assessment comes from a team of scientists assembled the Nature Conservancy in 2008: “Many believe the mountain pine beetle epidemic, now nearly a decade in duration, might be unprecedented at least in recent centuries.” Merrill R. Kaufmann, Gregory H. Aplet, Mike Babler, William L. Baker, Barbara Bentz, Michael Harrington, Brad C. Hawkes, Laurie Stroh Huckaby, Michael J. Jenkins, Daniel M. Kashian, Robert E. Keane, Dominik Kulakowski, Charles McHugh, Jose Negron, John Popp, William H. Romme, Tania Schoennagel, Wayne Shepperd, Frederick W. Smith, Elaine Kennedy Sutherland, Daniel Tinker, and Thomas T. Veblen, *The Status of Our Scientific Understanding of Lodgepole Pine and Mountain Pine Beetles: A Focus on Forest Ecology and Fire Behavior*, GFI Technical Report 2008-2 (Arlington, Va.: The Nature Conservancy, 2008), unillustrated version, p. 2.

²³⁶ Jeff Connor, personal communication with author via e-mail, Sept. 21, 2011, in author’s possession;

Though the insects followed the winds and their own instincts, their impact resembled that of a concerted campaign; “the initiation of the MPB eruption on the west side of RMNP,” notes ecologist Kellen Nelson, “was synchronous and widespread.”²³⁷ By 2008, the beetles had infected most every patch of lodgepole forest in the Kawuneeche.²³⁸ Tens of thousands of acres of dead trees first turned red, then gray, leading to a host of secondary effects. A recent study, for instance, found that greater snowpack accumulated over the course of the winter under so-called “grey phase” trees (which have typically been dead for 27 months or longer, and have dropped all of their needles) than under healthy lodgepoles, and snow melted more quickly under both grey and red phase.²³⁹

Some foresters cited in press accounts initially blamed the present outbreak on drought, which had stressed pines over the three or four years preceding the infestation.²⁴⁰ Wayne Shepperd of the Rocky Mountain Forest and Range Experimental Station argued that “While beetle infestations are part of a natural cycle, they’re probably more severe now because humans have circumvented nature by suppressing fires that historically thinned America’s forests

²³⁷ Nelson, 14.

²³⁸ Diskin claimed that the epidemic was “most severe” on the west side of Rocky as of 2008. Matthew Diskin, “Forest Regeneration Trajectories in Mountain Pine Beetle-Disturbed Forests of Rocky Mountain National Park” (master’s thesis, Colorado State University, 2010), 6.

²³⁹ Evan Pugh and Eric Small, “The Impact of Pine Beetle Infestation on Snow Accumulation and Melt in the Headwaters of the Colorado River,” *Ecohydrology* (2011), published online, wileyonlinelibrary.com (accessed Sept. 21, 2011); Matthew H. Nelson, “How Bark-Beetle Infestations Could Intensify Spring Runoff,” *High Country News*, June 21, 2011, online at <http://www.hcn.org/blogs/range/how-bark-beetle-infestations-could-intensify-spring-runoff> (accessed Sept. 21, 2011). The key factor in higher snow accumulation is that without needles, more snow reaches the ground instead of landing on the forest canopy. The main dynamics driving faster snowmelt in red phase stands is the large quantity of needles that accumulate on top of snow in MPB-affected stands; these reduce the albedo of the snow surface and increase the absorption of solar radiation. In grey phase stands, the lack of needles allows larger quantities of solar radiation to reach the snow surface, thus accelerating snowmelt.

²⁴⁰ Gerhardt, “Time Is Critical to Stem Epidemic of Pine Beetle.” Nelson has since found that even after “broad-scale forcing [i.e. drought] subsided in the middle stage of the eruption ... this did not suppress populations [of beetles] because a positive feedback cycle had begun and beetles were able to overcome the defenses of healthy trees.” Nelson, 18.

[W]oodlands in the entire Western United States are now so dense they are at risk of massive infestation.”²⁴¹ Such interpretations essentially replicated the prevailing understandings of the 1965-1986 MPB epidemic.

The consensus view that more than a century of fire suppression imposed by state and federal conservation officials lay behind the *Dendroctonus* epidemic, however, soon began to fall apart as the infestation spread in the late 1990s and early 2000s. USFS entomologists Barbara Bentz and Jesse Logan successfully shifted the agency’s view on beetle outbreaks from aggressive (and largely unsuccessful) control using massive quantities of pesticides, to a new framework in which mountain pine beetles figure as a natural element of western pine forests. “Our major focus was on natural disturbance,” Logan recalled to a *High Country News* reporter of this shift in perspective, “and how we can live with it.”²⁴² Meanwhile, William L. Baker and other forest ecologists began to discredit the assumption that Indian peoples in the Rocky Mountains, like their counterparts elsewhere in Native America, had regularly used small-scale surface fires in subalpine forests in order to “manage” these ecosystems and provide salutary conditions for hunting and gathering.²⁴³ Last but hardly least, a number of researchers began to advance innovative analyses of fire history in subalpine areas based on exhaustive field research. Several studies dismantled several key tenets of the so-called “fire exclusion/fuel buildup” model—the notion that present-day lodgepole pine forests in Colorado were unnaturally dense, unhealthy, and subject to catastrophic fires unprecedented in known history because fire suppression had excluded an element that had long played a crucial role in thinning stands.

Rosemary Sherriff, Tom Veblen, and Jason Sibold, for instance, argued in a 2001 article based

²⁴¹ Kelly, “Return of the Pine Beetle.”

²⁴² Michelle Nijhuis, “Global Warming’s Unlikely Harbingers: The West Is Heating Up—And Bark Beetles Are Moving in for the Kill,” *High Country News*, July 19, 2004, online at: <http://www.hcn.org/issues/278/14853> (accessed Sept. 19, 2011).

²⁴³ I cite several of these sources in chapter 1.

on 13 high-elevation forest sites along the Colorado Front Range that they found “strong evidence that the fire suppression policy ... has not resulted in a decline in fire occurrence at these high elevation sites.”²⁴⁴

The research most relevant to understanding historical forest dynamics in the Kawuneeche Valley drew upon several of these shifting perspectives on subalpine forests and their histories. Jason Sibold’s 2005 dissertation (and articles presenting findings from the same project) involved thorough field research of 676 cross-sections of fire-scarred trees and 6,152 tree-ring core samples, all drawn from subalpine forests in Rocky Mountain National Park, with three of his five study areas falling on the west side. Sibold found evidence that spreading surface fires had affected only 1-3% of the study area (depending on the method of extrapolation used to estimate the areal extent of findings from fire scars found on individual trees) over the previous four centuries—a conclusion that undermines the assumption that frequent surface fires played an integral role in forest health.

Virtually all of Sibold’s samples contained irrefutable evidence that after a “hiatus” from wildfire between 1783 and 1850, forest fires grew more frequent and widespread in the second half of the nineteenth century; in a pattern that Sibold notes is “widespread in the southern Rockies and the Southwest,” this period of increased fire correlated with drier climatic conditions, as well as with the advent of American conquest and white settlement.²⁴⁵ Sibold’s study areas in the Colorado River headwaters experienced a fire of greater than 1800 ha in extent in 1871, and two additional fires of 239 and 36 ha in 1879 and 1893, respectively; Tonahutu-

²⁴⁴ Rosemary L. Sherriff, Thomas T. Veblen, and Jason S. Sibold, “Fire History in High Elevation Subalpine Forests in the Colorado Front Range,” *Écoscience* 8 (2001), 378. 369-80.

²⁴⁵ Sibold concedes that “the coincidence of more frequent and severe drought with Euro-American settlement makes it difficult to separate the contributions of these two potential explanations for increased fire occurrence.” Jason S. Sibold, “Multi-Scale Subalpine Forest Dynamics, Rocky Mountain National Park, Colorado” (Ph. diss., University of Colorado at Boulder, 2005), 41-42.

North Inlet witnessed fires of 2309 ha and 487 ha in 1851 and 1879, respectively; and the East Inlet experienced a fire of 4177 ha and 400 ha in 1851 and 1902, respectively.²⁴⁶

Since the creation of the National Park in 1915, the west side of Rocky experienced only three fires of any size. The Lake Nakoni Fire of 1944 (10.5 Ha), the Paradise Park Fire of 1988 (8.1 ha), and the Cairns Fire of 1994 (36.4 Ha) *collectively* burned about 136 acres of timber in forests comprising tens of thousands of acres. Sibold attributed this downturn in wildfire less to the success of fire suppression than to the slowness with which fuels accumulated in subalpine forests following the major fires of the second half of the nineteenth century.²⁴⁷ “Current forest patterns,” Sibold wrote, “reflect widespread fires in the second half of the 19th century. The modern landscape on the west side of the divide is dominated by patches that established following fires in 1851, 1871 and 1879 and older fires in 1695, 1708, 1730, and 1782.”²⁴⁸

Wildfire in the Kawuneeche, like fires in subalpine forests more generally, tended to affect large areas; “fires on the west side of the continental divide,” Sibold found, “burned an average of c. 18 to 25% of drainages, and 40% of fires burned more than a third of drainages.”²⁴⁹ Fire rotation, the average time between stand-replacing fires in a study area, ranged from 145 to 273 years in the lodgepole areas Sibold studied on the west side of the divide; rotation periods in spruce-fir forests were considerably longer.²⁵⁰ Fires were infrequent, in other words, but big and intense. A little more than one-quarter of the study area on Rocky’s west side consisted of so-called “old forests,” chiefly spruce-fir communities that showed no signs of fire in the past 400 years or more.²⁵¹

²⁴⁶ Ibid., table 2.4, 28.

²⁴⁷ Ibid., 15.

²⁴⁸ Ibid., 32.

²⁴⁹ Ibid., 34.

²⁵⁰ Ibid., table 2.4, 28; 36.

²⁵¹ Ibid., 38-40.

Discussions of the MPB outbreak of the 1970s through 1986 almost invariably blamed fire suppression for establishing even-aged stands in lodgepole forests in the Colorado Rockies; this remains a common explanation of the beetle epidemic in many forestry circles and among the general public to the present day. Sibold, by contrast, attributed the homogeneity of Colorado's lodgepole forests not to federal policies in the twentieth century, but instead to enduring patterns that stretch back to the seventeenth century, and quite possibly much earlier. As Sibold pointed out, his research:

clearly is not consistent with the key premises underlying much of the current policy of fire management and ecological restoration in the forests of the West. These premises include a widespread notion among decision-makers, managers and the general public that in general in the West suppression of formerly frequent surface fires has resulted in increases in stand densities, increased forest susceptibility to pest and pathogen outbreaks, and a shift in fire severity from non-lethal surface fires to stand-replacing fires. This general scenario, which is so prominent in policy discussions, is referred to as the fire exclusion/fuel buildup model. The premises behind this model need to be critically evaluated for different forest ecosystem types and even for different geographical areas within the same ecosystem type.²⁵²

Contrary to the assumptions of the fire exclusion/fuel buildup model, surface fires in the subalpine zone of RMNP turned out to have been rare and largely inconsequential over the past 400 years; instead, “infrequent and large stand-replacing fires associated with strong droughts

²⁵² Ibid., 47.

characterized the historic fire regime.”²⁵³ Sibold did concede that fire suppression in Rocky between 1920 and 1989 probably “has stopped some natural fires from burning larger areas during the 20th century.” More than a dozen years during the fire-suppression era, after all, were as dry or drier than those historically associated with stand-replacing fires, and thus at least some of these might reasonably have been expected to have seen large fires like those recorded between the 1600s and late 1800s.²⁵⁴ But lodgepole forests characterized by “high stand densities”—the much maligned forests of “doghair pine” composed of skinny, bristly trees covering the ground like so much coniferous fur—resulted from “the effects of widespread burning in the 19th century, and it is highly likely that similarly high densities followed large fire events in the 17th and 18th centuries.”²⁵⁵

Sibold also pointed out the dramatic implications of his findings for forest policy: thinning to prevent fuel build-up would essentially create forests that would not correspond to those known to have existed in the past; moreover, since fuel moisture, not fuel availability, is generally the most important factor in explaining fire occurrence in the subalpine zone, thinning was unlikely to prevent the large stand-replacing fires that actually represent the “natural” ecological pattern that has long prevailed in Rocky’s subalpine forests. “Thinning,” as Sibold bluntly concluded, “does not constitute ecological restoration.”²⁵⁶ A report that resulted from a 2008 conference in which the Nature Conservancy brought together more than 20 leading lodgepole pine and mountain pine beetle experts portrayed “control” efforts in a similarly negative light, though using rather different rationale: “Mountain pine beetles are so numerous

²⁵³ Ibid., 48.

²⁵⁴ Ibid., 48-49, 63.

²⁵⁵ Ibid., 48.

²⁵⁶ Ibid., 49, 105 (quoted). Sibold even postulates that thinning might replicate problematic features of MPB outbreaks, increasing forest density while providing effective “ladder fuels” by which surface fires could grow into canopy fires. 104-105.

and spreading so rapidly into new areas that they will simply overwhelm any of our efforts where trees have not yet been attacked, and no management can mitigate the mortality already occurring.”²⁵⁷

An emerging body of literature convincingly demonstrating the centrality of climate in driving forest fire in the subalpine zone of the Rockies has reinforced the growing skepticism that humans could meaningfully “manage” the MPB outbreak. To return to Sibold’s work on Rocky Mountain, the forest ecologist found robust correlations between large fire years and drought conditions; drought, in turn, is driven largely by global climatic patterns. Thus fire years in the Kawuneeche almost invariably occurred during extremely dry seasons when three drivers of large-scale regional climatic conditions aligned: La Niña phases of the El Niño/Southern Oscillation (ENSO), warm phases in the Atlantic Multidecadal Oscillation, and cold phase conditions in a third pattern known as the Pacific Decadal Oscillation (PDO).²⁵⁸ These three drivers aligned during the recent period of drought (1999-2002) that seems to bear some responsibility for initiating the current MPB outbreak, and AMO has presently entered a long phase amenable to dry conditions and fire outbreak in the subalpine forests of the Kawuneeche Valley.²⁵⁹

At some point in the near future, when La Niña coincides with these two other factors, thus fostering ideal fire conditions, the resulting conflagrations will likely resemble those that have historically occurred over the course of at least the past 400 years in Rocky: big and

²⁵⁷ Kaufmann et al., “Status of Our Scientific Understanding of Lodgepole Pine and Mountain Pine Beetles,” 9.

²⁵⁸ Sibold, “Multi-Scale Subalpine Forest Dynamics, 58-60.

²⁵⁹ *Ibid.*, 110.

severe.²⁶⁰ Given the long-standing fears that many observers have expressed regarding the “tinder box” conditions that pine beetles have created in the Kawuneeche’s lodgepole pines, such fires—whenever they at last erupt—seem almost certain to be misunderstood by the general public, as well as by those experts in ecology, forestry, and environmental history who continue to abide by the fire exclusion/fuel buildup model. Associating pine beetle outbreaks with forest fires, after all, flies in the face of research demonstrating that no such correlation exists.²⁶¹ As for the ecological effects of MPB outbreaks themselves, Jason Sibold, Tom Veblen, and other researchers have shown that forests afflicted by beetles regenerate quite quickly; under some conditions (particularly when mortality from bark beetles is not high and the insects attack long after stand-replacing fires), subalpine fir begins to take over areas where lodgepoles formerly prevailed. In most situations, though, young lodgepoles quickly begin to recolonize.²⁶²

The implications of recent research into fire, *Dendroctonus*, and ecology in the lodgepole pine forests of Rocky Mountain National Park actually even points toward some unexpectedly reassuring possibilities. Matthew Diskin wrote in a 2010 master’s thesis, for example, that “forests on the western side of Rocky Mountain National Park remained fully stocked with surviving trees, despite widespread mountain pine beetle-induced mortality in the canopy.”²⁶³

Because of this, Diskin argues, “active management would not be necessary to restore forested

²⁶⁰ Sibold notes that although there is “no evidence” that subalpine forests in the Park have moved outside the historic range of variability, he also makes it clear that “continued successful fire suppression will create conditions that are outside of the HRV in the coming decades.” *Ibid.*, 112.

²⁶¹ See, in particular, William L. Baker, *Fire Ecology in Rocky Mountain Landscapes* (Washington, D.C.: Island Press, 2009), 110-114. “The limited available evidence,” Baker concludes, “suggests that fires will not be substantially changed in intensity of extent” because of bark beetle infestations (114).

²⁶² Sibold, “Multi-Scale Subalpine Forest Dynamics,” 100-103.

²⁶³ Diskin, “Forest Regeneration Trajectories in Mountain Pine Beetle-Disturbed Forests of Rocky Mountain National Park,” 13. Diskin goes on to argue that “the most important mechanism for forest renewal in the Park following this epidemic will be the release [rapid growth] of surviving trees,” not the establishment of new seedlings (14). It is also important to note, though, Diskin’s caution: one type of lodgepole forest, known as a “lodgepole-sparse understory” type, is likely to recover from the MPB outbreak “very slowly,” in approximately 60 to 80 years, depending on the assumptions used (39).

conditions in the Park.”²⁶⁴ And even if fire remains in abeyance while beetle outbreaks continue, Sibold claims that “it is likely that a shift in the predominant disturbance type from severe fire to MPB outbreak and/or blowdown [extensive wind-caused tree mortality events that become much more likely in aging lodgepole forests] would result in considerable heterogeneity of stand age structures, tree densities, and species compositions at the landscape scale. This scenario” in which the Kawuneeche’s forests might actually become more diverse and complex as a result of the mountain pine beetle epidemic, “is in stark contrast to the landscapes created by the large-scale, stand-replacing fires that have traditionally shaped the lodgepole pine forest type in the study area.”²⁶⁵ Diskin attempted to make more precise predictions of future forest conditions within Rocky; his computer modeling largely reinforce Sibold’s forecast: “spruce, fir, and aspen [will] become dominant in ... approximately 60% of the landscape, while lodgepole pine remains dominant in the forests where it formed pure stands prior to the epidemic.”²⁶⁶ Research by Kellen N. Nelson offers still further support to the hypothesis that *Dendroctonus* infestations in recent years will actually produce less homogeneous forests; Nelson argues that mountain pine beetle in the Kawuneeche “relieves conifer pressure” on aspen, possibly “lead[ing] to successful

²⁶⁴ Ibid., 47.

²⁶⁵ Sibold, “Multi-Scale Subalpine Forest Dynamics,” 106. Kellen Nelson claims that “if current post-eruption stands develop without being reinitiated by wildfire, diameter distributions may cease to resemble that of a stand-replacing disturbance regime and may take on traits of late-successional forests where perpetual rates of initiation and mortality occur through time.” “Effect of Mountain Pine Beetle Caused Mortality on Subalpine Forest Stand and Landscape Structure in Rocky Mountain National Park, CO,” 16. There is evidence that environmentalists have taken note of at least some of this research. Greg Aplet of the Wilderness Society told a recent conference on “Forests at Risk” in Aspen that the even-age structure of so many lodgepole pine forests in Colorado was a product largely of mining-related logging, not fire suppression. He also emphasized the place of beetle outbreaks in long-term ecological cycles: “The forests will come back after this epidemic,” columnist Ed Quillen paraphrases Aplet as saying, “but they’ll likely look different -- not as many large trees and a greater diversity of species. ‘Life will find a way. It just may not be the life we’re used to.’” Ed Quillen, “Forests Will Recover from Pine Beetle,” *High Country News*, Feb. 27, 2011, online at <http://www.hcn.org/blogs/range/forests-will-recover-from-pine-beetle> (accessed Sept. 19, 2011).

²⁶⁶ Diskin, “Forest Regeneration Trajectories in Mountain Pine Beetle-Disturbed Forests of Rocky Mountain National Park,” iv. This contrasts with 85% lodgepole pine dominance in 2008 (1).

aspen recruitment” and reversing a widespread trend toward conifer dominance in Rocky Mountain forests that has concerned some ecologists and land managers.²⁶⁷ Nelson recognizes that “the current mountain pine beetle outbreak has caused extensive changes to the subalpine forest landscape, but” he finds compelling evidence that “high densities of surviving trees and increased stand-scale heterogeneity will allow forest recovery and increased resistance in the face of future outbreaks.”²⁶⁸ Indeed, the increasingly heterogeneous stand structures presently developing in the Kawuneeche might even “make it difficult,” Nelson postulates, “for beetle populations to become self-perpetuating within forest stands and erupt at increasing scales.”²⁶⁹

Rocky Mountain National Park has started to incorporate the emerging message of ecologists that the mountain pine beetle is a natural component of forest ecosystems and an agent of natural regeneration. As Tom Veblen and Bill Romme have phrased it, “From a purely ecological standpoint, dead and drying trees do not necessarily represent poor 'forest health.' They may instead reflect a natural process of forest renewal.”²⁷⁰ Visitors to the Kawuneeche today encounter a version of the same message on placards situated at the Harbison picnic site and several other valley locations. Whether they believe these assurances or make their own meanings of the dead trees before their eyes, however, remains an open question.

²⁶⁷ Nelson, “Effect of Mountain Pine Beetle Caused Mortality on Subalpine Forest Stand and Landscape Structure in Rocky Mountain National Park, CO,” iv, 47. Diskin makes similar arguments regarding aspen; 17, 44. The literature debating the causes of the apparent decline of aspen in Colorado is voluminous. Perhaps the most relevant study is Dan Binkley, “Age Distribution of Aspen in Rocky Mountain National Park, USA,” *Forest Ecology and Management* 255 (2008), 797-802. See also D. M. Kashian, W. H. Romme, and C. M. Regan, “Reconciling Divergent Interpretations of Quaking Aspen Decline on the Northern Colorado Front Range,” *Ecological Applications* 17 (2007), 1296-1311 and J.J. Worrall, L. Egeland, T. Eager, R. A. Mask, E. W. Johnson, P. A. Kemp, and W. D. Shepperd, “Rapid Mortality of *Populus Tremuloides* in Southwestern Colorado, USA,” *Forest Ecology and Management* 255 (2008), 686-96.

²⁶⁸ Nelson, “Effect of Mountain Pine Beetle Caused Mortality on Subalpine Forest Stand and Landscape Structure in Rocky Mountain National Park,” 1-2.

²⁶⁹ *Ibid.*, 20.

²⁷⁰ Quoted in Allen Best, “A Sucker Punch to the Stomach: When Trees Turn Red,” *High Country News*, Aug. 17, 2009, <http://www.hcn.org/wotr/a-sucker-punch-to-the-stomach-when-trees-turn-red> (accessed Sept. 19, 2011).

Conclusion

The National Park Service's efforts to achieve greater control over the Kawuneeche Valley produced many positive outcomes. The Water Supply and Storage Company took more care to limit and remedy the aesthetic and ecological damage the Grand Ditch caused. By buying up inholdings and extending Rocky's borders, Park officials held at bay both the sort of crass commercial landscape so characteristic of park gateway towns, and the second-home subdivisions that would eventually cover much of Middle Park between Winter Park and Grand Lake. By destroying dozens of structures, the service ensured that the valley would become neither a ghost landscape of decaying ruins, nor (with some notable exceptions such as Holzwarth's) a place frozen by administrative edict at a particular moment in time. And by controlling forest fires, building trails and transportation facilities, and eventually designating most of the Kawuneeche a wilderness area, the Service helped to make the valley more accessible and desirable to many more visitors.

Though no reasonable person could argue that the valley's ecological systems would have fared better had RMNP abandoned land purchases or transfers after the Never Summer addition of 1930, the elaborate efforts the agency has devoted over some eighty years to restoring the Kawuneeche to a "pristine" state or "natural conditions" have nonetheless failed to yield all of the results desired. A 1993 study of sedimentation in the valley might have applied to many other aspects of the Kawuneeche environment: "The valley," researchers concluded, "should not be regarded as a pristine, undisturbed, watershed."²⁷¹

²⁷¹ Terrence Toy, Donna Ryder, and David Longbrake, "Identification of Potential Sediment Sources in Kawuneeche Valley Using a Geographic Information System," *Proceedings of the Symposium on Geographic Information Systems and Water Resources* (Mobile, Ala.: American Water Resources Association, 1993), 145.

Three sets of unresolved problems help to explain Rocky's inability to unmake the changes settlement had wrought on the Kawuneeche. First, the Park Service's plan simultaneously to freeze the valley at some unspecified pre-settlement moment (a moment disturbingly devoid of Indians), and to make the valley attractive to modern tourists reflected the paradoxical mission Congress imposed on the NPS. Second, the west side of the park remained a political-economic unit rather than a coherent habitat, ecological system, or network of systems and habitats. The Grand Ditch cut across one edge of the park, a large expanse of privately-held land remained between Grand Lake and the Park boundary, and a few inholdings remained in private hands throughout the years. Perhaps more important than the arbitrary nature of such borders was the ongoing frequency and force with which outside forces impinged upon the valley's social ecology. Tourists and pine beetles, moose and wilderness ideals, nitrogen compounds and development schemes, western myths and growing unease with hunting, environmental regulations and court decisions—these and other elements of the unfolding history of the locale, the state, the West, the nation, the continent, and the planet failed to respect Park borders. Finally, the Service's general conception of nature as possessing some sort of inherent balance increasingly diverged from the growing consensus among ecologists from the 1970s onward that even supposedly "pristine" ecosystems changed in ways best explained not through models of stasis, balance, or dynamic equilibrium, but instead through chaos theory.²⁷² Interactions between beaver, elk, moose, and willow provide a case study in the tendency of

²⁷² On chaos theory and ecology, see Donald Worster, *Nature's Economy: A History of Ecological Ideas* (New York: Cambridge University Press, 1994), ch. 17. As Worster and the sources he cites emphasize, chaos theorists find considerable order lurking beneath surface indications of randomness. As Paul McLaughlin of Rocky commented on an earlier version of this draft, the "current park management's growing reliance on science-based decision making and adaptive management (applied with a healthy dose of humility) recognizes that a knee-jerk reactive approach to ecological management can create more problems than it solves." Personal communication with author, Feb. 1, 2011.

Rocky officials to adopt policies that served to reshape the Kawuneeche's ecology in unexpected and unintended ways.

Chapter 5: Beaver, Elk, Moose, and Willow

Neither elk nor willow had fared especially well under American rule. By the late 1800s, the combined effects of hunting and habitat destruction had probably extirpated elk from the Kawuneeche Valley.¹ Settlers, anxious to replace “native meadow” with “tame hay,” had also grubbed out hundreds of acres of willow from the valley floor.

Beaver populations, by contrast, seem to have recovered by the early twentieth century from the fur-trade onslaught of prior years. To naturalists like Enos Mills, the rodents’ unlikely resurgence held important lessons for Americans who cared about the natural world. To readers today, meanwhile, Mills’ words help us better understand just why ecologists and hydrologists find the prospect of a Kawuneeche Valley devoid of beavers to be so troubling.

In an essay from *Wild Life on the Rockies* (1909) entitled “The Beaver and His Works,” Mills, the well-known lodge-keeper and nature writer who was then in the throes of launching his campaign to establish a wildlife refuge in the Estes Park area (an idea that bore fruit with the 1915 creation of Rocky Mountain National Park), declared: “The beaver has so many interesting ways, and is altogether so useful, so thrifty, so busy, so skillful, and so picturesque, that I believe his life and his deeds deserve a larger place in literature and a better place in our hearts.”² Mills illustrated the beaver’s significance by recounting a journey to the Kawuneeche, where he “made an extensive examination of some old beaver-works.” Looking at old beaver dams and lodges impressed upon Mills the critical ecological work that the rodents performed: cutting trees,

¹ At the very least, no sources mention elk in the valley between the early 1880s and the 1910s.

² Enos Mills, “The Beaver and His Works,” in *Wild Life on the Rockies* (Boston and New York: Houghton Mifflin, 1909), hypertext at: <http://abob.libs.uga.edu/bobk/beavwork.html>.

building lodges, accumulating a store of winter food (“a large brush-heap of green trunks and limbs, mostly of aspen, willow, cottonwood, or alder”).



An unidentified angler displays his catch atop one of the Upper Colorado’s ubiquitous beaver dams. This photograph suggests the importance of beavers to the hydrology and ecology of the Kawuneeche Valley floor. Photographer unknown, n.d., catalog #12-E, negative #2816, album #4014.

Dam-building, however, fascinated Mills more than any other aspect of animal labor, for “it is in dam-building that the beaver shows his greatest skill and his best headwork; for I confess to a belief that a beaver reasons.” Mills credited beaver with a keen ability to read the landscape and select the most promising site for dam construction. He also understood that beavers, despite their modest size, could unleash expansive changes to the landscape. “An interesting and valuable book could be written,” Mills quipped with reference to the subtitle of George Perkins

Marsh's 1864 masterpiece, *Man and Nature*, "concerning the earth as modified and benefited by beaver action, and I have long thought that the beaver deserved at least a chapter in Marsh's masterly book, 'The Earth as modified by Human Action.'" Mills called "the influence of a beaver-dam" nothing short of "astounding." Upon completion, each dam "begins to accumulate trash and mud. In a little while, usually, it is covered with a mass of soil, shrubs of willow begin to grow upon it, and after a few years it is a strong, earthy, willow-covered dam."³

Mills remarked that a beaver dam "has a decided influence on the flow of the water, and especially on the quantity of sediment which the passing water carries. The sediment, instead of going down to fill the channel below, or to clog the river's mouth, fill the harbor, and do damage a thousand miles away, is accumulated in the pond behind the dam, and a level deposit is formed over the entire area of the lake." Eventually, sediment would fill up the lake, "but before this happens, both lake and dam check and delay so much flood-water that floods are diminished in volume, and the water thus delayed is in part added to the flow of the streams at the time of low water, the result being a more even stream-flow at all times."⁴ Beavers and willows, as Mills recognized, and as subsequent researchers would conclusively demonstrate, engaged in a productive symbiosis that had profound hydrological consequences. Beaver dams provided habitat for the water-loving shrubs by damming streams and increasing sediment deposition; willows, in turn, offered beavers a nutritious source of food, as well as material with which the animals could construct further dams and lodges. More than any other species, beavers and willows shared responsibility for making the riparian ecosystems and landscapes Mills examined along the Upper Colorado.⁵

³ Ibid.

⁴ Ibid.

⁵ See, in particular, Cherie J. Westbrook, "Beaver as Drivers of Hydrogeomorphic and Ecological Processes in a Mountain Valley" (Ph.D. diss., Colorado State University, 2005); Cherie J.

Mills, ever the devoted naturalist, proclaimed the beaver's "engineer works" to be "of great value to man," regulating stream flow, reducing erosion, and "catch[ing] and deposit[ing] in place much valuable soil, the cream of the earth, that otherwise would be washed away and lost." Mills cast beavers as animal engineers and gave them credit for maintaining healthy environments in the Kawuneeche and other parts of the Rockies; he even portrayed the animals as natural conservationists whose work human conservationists should help to support : "Only a few beaver remain," Mills lamented:

And though much of their work will endure to serve mankind, in many places their old work is gone or is going to ruin for the want of attention. We are paying dearly for the thoughtless and almost complete destruction of this animal. A live beaver is far more valuable to us than a dead one. Soil is eroding away, river-channels are filling, and most of the streams in the United States fluctuate between flood and low water. A beaver colony at the source of every stream would moderate these extremes and add to the picturesqueness and beauty of many scenes that are now growing ugly with erosion. We need to cooperate with the beaver,

Westbrook, David J. Cooper, and Bruce W. Baker, "Beaver Dams and Overbank Floods Influence Groundwater-Surface Water Interactions of a Rocky Mountain Riparian Area," *Water Resources Research* 42 (2006); Bruce W. Baker, Heather C. Ducharme, David S. Mitchell, Thomas R. Stanley, and H. Raul Peinetti "Why Aren't There More Beaver in Rocky Mountain National Park?," in *Proceedings of the Annual Conference of the Colorado Riparian Association* 17 (2004), p. 4 of typescript version in Bruce W. Baker, David Cooper, and Cherie Westbook, "Declining Beaver Populations in Rocky Mountain National Park," Final Report NRPP 99-04 (ROMO), in folder: "Westbrook, Cheri [sic], Beaver and the Grand Ditch 2 of 3—2002-2004," temp. box 102, RMNP Archives. More generally, see A. M. Gurnell, "The Hydrogeomorphological Effects of Beaver Dam-Building Activity," *Progress in Physical Geography* 22 (1998), 167-89.

Mills urged, for the beaver “would assist the work of reclamation, and be of great service in maintaining the deep-waterways. I trust he will be assisted in colonizing our National Forests, and allowed to cut timber there without a permit.”⁶ Mills suggested that land managers should enlist beavers to protect watersheds, save soil, and return nature to its primeval beauty. At the time, no one seems to have taken Mills’ proposal seriously; Woodrow Wilson’s promise to place a chicken in every pot would carry far more weight than Mills’ proposal to lodge a beaver at the head of every stream.⁷

And yet despite a decided lack of direct assistance from humans, beavers would indeed start colonies along the Upper Colorado River and its tributaries by the 1900s, leading many homesteaders to complain that “nature’s engineers” were undermining settlers’ efforts to improve the Kawuneeche. By the late 1930s, the large buck-toothed rodents were still causing trouble, flooding hay meadows and destroying the ditches and other diversions settlers had built in their desire to place themselves, their livestock, and their crops at the center of the valley’s ecological systems.⁸

Even as beaver were causing unprecedented trouble in the Kawuneeche, they were being joined in riparian meadows by escalating numbers of elk. Two species that had long played pivotal ecological roles in the valley had returned—and yet already by the 1930s, this apparent triumph of natural resource management was already causing no little unease among Park biologists, Kawuneeche Valley landowners, and NPS officials.

⁶ Mills, “Beaver and His Works,” n.p.

⁷ The most recent synthetic source on beavers presents a twenty-first-century viewpoint remarkably similar to Mills’: the last section of Dietland Müller-Schwartz’s *The Beaver: Its Life and Impact*, 2nd ed. (Ithaca, N.Y.: Comstock Publishing Associates of Cornell University Press, 2011), considers “how we might harness the beavers’ ‘ecosystem services,’ to serve us as ‘ecosystem engineers’” (xi).

⁸ See sources cited below, especially RMR, Oct. 1938, temp. box 68:026, RMNP Archives.

Return of the Natives: Elk Restoration in the Kawuneeche

Because of subsistence and market hunting, as well as the reduction of habitat caused by mining and homesteading, elk probably disappeared from the Kawuneeche during the late 1800s. How and when elk returned to the Kawuneeche is not exactly clear. By 1910, just “10 small bands” of the creatures remained in Colorado, totaling 500 to 1000 members in all, including about fifty head in and around Middle Park, and perhaps a handful of animals around Estes Park.⁹ Though some of these native elk may have wandered into the Kawuneeche, most of the elk that would subsequently come to inhabit the valley were presumably reintroduced. The most likely scenario points to animals transplanted from Jackson Hole and Yellowstone and released in Estes Park in 1913 and 1914.¹⁰ Following an instinctual proclivity for the fresh grass and browse that flourished just behind the retreating snows of spring, some of the herd planted on RMNP’s east side probably renewed an age-old pattern of migration: after spending their winters in and around the meadows of the Estes Park area and the foothills below, they moved up into summer pasture in the high country straddling the Continental Divide, and sometimes over the range and into the Kawuneeche.¹¹ The elk released at the behest of the Estes Park Protective and Improvement Association, though, comprised just one part of a larger program under which

⁹ Olaus J. Murie, *The Elk of North America* (Harrisburg, Pa. and Washington, D.C.: Stackpole Books and the Wildlife Management Institute, 1951), 23, based on Lloyd W. Swift, “A Partial History of the Elk Herds of Colorado,” *Journal of Mammalogy* 26 (1945), 114-119.

¹⁰ C. W. Buchholtz claims that “Beginning in 1913, elk were reintroduced, transplanted from Montana.” *Rocky Mountain National Park: A History* (Niwot, Colo.: University Press of Colorado, 1983), 130. Other sources, though, offer additional detail—and some conflicting details. “Elk were reintroduced into the Colorado (Roosevelt) National Forest from Yellowstone National Park and Jackson Hole National Elk Refuge,” Neal R. Guse and his collaborators wrote: “Official Forest Service reports show that two shipments of 49 elk were brought into the vicinity of Estes Park,” “20 cows and five bulls” in March, 1913, and 24 “two-year-old cows” in April, 1914, shipped by rail to Lyons, then “transported to Estes Park in make-shift cages aboard trucks.” Neal R. Guse, B. Rice, L. Carr, and R. Denney, “Rocky Mountain Cooperative Elk Studies: Preliminary Report, 1962-1963,” April 1, 1964, typescript in folder: N1427: “Wildlife 1963-‘4,” Box 14, Numerical Subject Files, Records of Rocky Mountain National Park, RG 79, Records of the National Park Service, NARA-Denver, p. 12

¹¹ Kenneth F. Larkins, “Patterns of Elk Movement and Distribution in and Adjacent to the Eastern Boundary of Rocky Mountain National Park” (M.A. thesis, University of Northern Colorado, 1997), 38.

the United States Forest Service and the Colorado Game and Fish Commission transplanted “yearling elk from the Jackson hole [sic] country of Wyoming into Colorado.”¹² Some elk almost certainly ventured into the Kawuneeche from surrounding National Forests. Seventy-two elk released in the Nederland-Rollinsville area and their descendants, for instance, could easily have ventured to the northwest, crossing the Indian Peaks during summer and early fall before ambling down to winter in the Kawuneeche.¹³

Elk, however they got to the Kawuneeche, would have entered a landscape of great social and ecological complexity. As “the broadest spectrum feeders among North American ungulates,” these large ungulates grazed and browsed a large array of plant species.¹⁴ But the creatures found some of the most attractive eating in wet meadows and willow thickets along the Colorado and its tributaries, as well as on the hay meadows carved out by homesteaders and ranchers. Elk populations in the Kawuneeche probably increased rapidly during the 1910s and ‘20s, thanks to the plentiful supply of food that lasted throughout the summer and much of the fall, not just in the river bottoms but also in subalpine and alpine areas on the Front and Never

¹² Joseph A. M’Neel, “Elk, Antelope and Mountain Sheep Come Out of the Forests and Prove Veritable Nuisance to Rancher and His Hay Stack,” *Denver Post* Dec. 2, 1917. Murie claims that “To restore the elk, 14 introductions were made over the period 1912 to 1928, totaling 35[0], mostly in areas where the original animals had been extirpated.” *Elk of North America*, 23. On the shipment of elk from Yellowstone and Jackson Hole to other sites, see Russell L. Robbins, Don E. Redfearn, and Charles P. Stone, “Refuges and Elk Management,” in Jack Ward Thomas and Dale E. Toweill, comps. and eds., *Elk of North America: Ecology and Management* (Harrisburg, Pa.: Stackpole Books, 1982), 488-89, especially figure 96.

¹³ “From the 36 survivors of two local releases and perhaps a small remnant of native stock, elk have subsequently increased to their abundance of today.” Guse et al., “Rocky Mountain Cooperative Elk Studies: Preliminary Report, 1962-1963,” 12. Twenty-five elk dropped off at Idaho Springs in 1916 from Wyoming, for instance, seem possible candidates. Pete Barrows and Judith Holmes claim that this herd originated in Jackson Hole; , *Colorado’s Wildlife Story* (Denver, Colo.: Colorado Division of Wildlife, 1980), 257. Robbins, Redfearn, and Stone, though, list this shipment as originating at Yellowstone. “Refuges and Elk Management,” 491. On 5 Yellowstone elk relocated to Rollinsville, Colorado, in 1917, see *ibid.*, 491. Long-distance migration may also have played a role.

¹⁴ Frederick H. Wagner, Ronald Foresta, R. Bruce Gill, Dale R. McCullough, Michael R. Pelton, William F. Porter, and Hal Salwasser, *Wildlife Policies in the U. S. National Parks* (Washington, DC and Covelo, Cal.: Island Press, 1995), 48. See also Murie, *Elk of North America*, 197-243.

Summer Ranges.¹⁵ Also salutary from the ungulates' perspective were the decline or eradication of most predators large enough to kill elk, particularly wolves and mountain lions, as well as the propinquity of good winter ranges near Estes Park and in Middle Park.¹⁶

Studies of elk populations in and around Rocky Mountain National Park have consistently slighted the Kawuneeche Valley, but three propositions seem to comport with most of the existing historical evidence: 1) elk usually do not winter in the Kawuneeche, though during some years (presumably years of low snowfall, since the burial of available forage by snow typically coincides with the start of elk migration) at least some of the creatures have remained in the valley throughout the cold season;¹⁷ 2) the Estes Valley and east side of Rocky Mountain National Park has long offered winter range for elk that spend their summers in the Kawuneeche Valley watershed, with Moraine Park and Beaver Meadows the most important winter ranges for animals that cross to the Kawuneeche in late spring or early summer;¹⁸ and 3)

¹⁵ Unfortunately, no one has ever undertaken a systematic study of elk populations in the Kawuneeche Valley. We thus lack the robust data required to chart historical changes in populations, migrations, habitat use, and so forth. This absence of evidence, however, should not be considered as evidence of absence. Elk occupied the Kawuneeche in unknown numbers and according to poorly understood constraints and opportunities. Almost invariably, though, Park officials, scientists, and state wildlife officers either ignored the west side elk population, or understood it according to the paradigms that developed to make sense of the east side elk problem.

¹⁶ On elk and predators, see Richard T. Taber, Kenneth Raedeke, and Donald A. McCaughran, "Population Characteristics," in Thomas and Toweill, comps. and eds., *Elk of North America*, 291; Murie, *Elk of North America*, 145-56.

¹⁷ On elk wintering in the valley, see below; on the relationship between snow, forage, and migration, see Arthur W. Adams, "Migration," in Thomas and Toweill, comps. and eds., *Elk of North America*, 307-308, 313-315. "Elk move to ranges where snow depth is minimal," Jack R. Nelson and Thomas A. Leege emphasize, "and exist there on whatever forage is available." "Nutrition and Food Habits," in *ibid.*, 347.

¹⁸ On migration into the Kawuneeche, see National Park Service, *Elk and Vegetation Management Plan - Rocky Mountain National Park, CO* (Washington, D.C.: G. P. O., 2007) [henceforth EVMP], 137. In this regard, the EVMP drew upon work by Kenneth Larkins and others. See, for instance, Larkins, "Patterns of Elk Movement and Distribution," 24. On creatures staying in the Kawuneeche all winter, see *ibid.*, 33-36. Bear's 1989 study, in contrast to Larkins' work, had elk using the Kawuneeche "only as an intermediate range." George D. Bear, "Seasonal Distribution and Population Characteristics of Elk in Estes Valley, Colorado," Colorado Division of Wildlife Special Report Number 65 (April 1989), 5.

other elk that summer in the valley probably migrate down the Colorado River, to winter ranges around the Granby area of Middle Park.¹⁹ Despite the complexity of these patterns, the National Park Service has only recently begun to break from a view of elk migration that greatly oversimplifies how the animals move through space and time. Elk in the Kawuneeche do not respect National Park boundaries; while some do spend part of most years in or around Estes Park, others migrate into the Kawuneeche from lower-lying portions of the Colorado River valley. For at least the first fifteen years of the twentieth century, the willows of the Kawuneeche received something of a respite from hungry elk, but as populations of these large herbivores increased dramatically in the ensuing decades—Colorado’s total elk herd, having dwindled to 500-1,000 members around 1910, had swelled to 98,000 head by 1976—the valley’s willows faced renewed browsing pressure.²⁰

While studies addressing Rocky Mountain National Park’s elk overpopulation problem almost invariably launch their historical discussion in the spring of 1930, when rangers and biologists first complained that elk were destroying aspen and other vegetation on the Park’s east side, the first accounts of elk overpopulation in the greater RMNP region actually appeared not on the east side, but in Grand County.²¹ By July, 1929, the Board of County Commissioners sent a petition to the State Game and Fish Commissioner in which it complained: “Elk have become so numerous in Grand County as to ... constitute a menace to the property of the ranchmen of said County.” The board requested a “short open season on elk this year,” but the state wildlife

¹⁹ See, for instance, Guse et al., “Rocky Mountain Cooperative Elk Studies: Preliminary Report, 1962-1963,” typescript map after p. 7, which documents movement of “park” elk into the Never Summers.

²⁰ Larry D. Bryant and Chris Maser, “Classification and Distribution,” in Thomas and Toweill, comps. and eds., *Elk of North America*, 41.

²¹ See, for instance, Jerritt James Frank, “Marketing the Mountains: An Environmental History of Tourism in Rocky Mountain National Park” (Ph.D. diss., University of Kansas, 2008), 281 and Guse et al., “Rocky Mountain Cooperative Elk Studies: Preliminary Report, 1962-1963,” p. 14.

agency ignored their plea. Four months later, the editor of the *Middle Park Times* felt compelled to ask: “What use are elk? Why does the state protect them? And, having them, what should be done with them?”²²

The editor’s answers to answers to these queries offered some prescient perspectives on the difficult decisions managers at RMNP would confront in the decades ahead, as they struggled to cope with an overabundance of elk within the park. Elk, the editor began, are “ornamental. In the wilds they are beautiful and an elk head and antlers, well mounted, makes a striking wall piece in a gentleman’s study. Their teeth have a commercial value; their hide make enduring leather and their flesh can be eaten. But their greatest value,” he argued, was simple: “their presence in our forest helps to draw tourists, [and] gives Colorado attractiveness as a playground.”²³ Just a few decades after state and federal officials has responded to the dwindling of the area’s elk populations with concerted efforts by to transplant and propagate the ungulates, a Middle Park newspaperman was already drawing a powerful equation between elk and tourism in the wake of.²⁴

After concisely enumerating the various ways in which elk had value, the *Middle Park Times* editor shifted focus from markets to policy. “The state and federal governments try to perpetuate big game and the elk is about the biggest wild animal in the state. They are comparatively easily shot. If not protected they would soon be eradicated,” the editor believed. “But, protected as they are, they eat forage that would otherwise produce tame stock and they often devour and destroy food raised on ranches. The local ranchmen would seem to have some

²² *Middle Park Times*, Nov. 21, 1929.

²³ *Ibid.*

²⁴ *Ibid.* Here I borrow Richard Sellars framing of the basic conundrum of natural resource management in the parks. *Preserving Nature in the National Parks: A History* (New Haven, Ct.: Yale University Press, 1997), 4. See also Frank, “Marketing the Mountains.”

rights in them,” the *Times* claimed with down-home logic and a touch of bemusement regarding the contradictions between animal appetites and human systems of property.²⁵

The real problem with elk, though, was not so much metabolic as reproductive. As big animals, elk ate a lot; but they also bred rapidly. “In time they multiply, become a nuisance in some places. What shall we do with the surplus?” Transplanting animals to those parts of Colorado still lacking elk constituted one possibility. “Very well, we will suppose that has been done,” the editor conceded with reference to ongoing state conservation efforts. “But the multiplying continues. The state protects them, feeds them, kills off predatory animals. What shall we do with the elk surplus?”²⁶

As of the editor’s writing, public hunters licensed by the state were killing and consuming a considerable percentage of this surplus. And yet the editor condemned the use of elk for sport in no uncertain terms. “We have just passed through an orgy of killing. 1929 will be remembered as the year when the elk and deer were slaughtered.” After intimating that hunting was cruel, the editor proceeded to question the supposed financial benefits that allegedly accrued because elk brought elk hunters into the area. During the past hunting season, “Hotels and auto camps receive some patronage. [Hot] Sulphur [Springs] hosts took in about \$300. Other points in the county received possibly as much more. Stores sold them some goods. Perhaps the hunters left \$700 in Grand county and took out elk worth \$7500. May be the state got a thousand dollars for licenses.” Such numbers made hunting “A poor business for state and county!” Worse, “many of the hunters were poor sports, messing the game. Is there any better way?,” the editor asked.²⁷

²⁵ *Middle Park Times*, Nov. 21, 1929.

²⁶ *Ibid.*

²⁷ *Ibid.*

He then proceeded to answer his own question by outlining two possible courses of action. “One would be for the state to send in each year expert huntsmen who would quietly and skillfully shoot the surplus and in a business like manner dispose of the animals. The state would make money.” As for the second option, “the state might make a rule that as long as the elk stay in the game preserves or the National forests they shall be inviolate. But when they stray to the ranches, as they will,” the editor proposed, “the ranchers may kill them and report to the game wardens, paying to the state a certain amount for each one so killed. Thus the number would be kept down and the ranchers would be protected and the state would receive some value for its wards. Such plans,” the editor concluded, “would be better than allowing them to multiply beyond a reasonable limit, and better than to have such a slaughter as we have seen this fall.”²⁸

This remarkably prescient editorial raised the alarm regarding elk populations in Grand County; it also charted out in very rough outlines of the two primary policy options the National Park Service would alternately pursue in the decades ahead as the agency grappled with the competing uses, values, and problems elk embodied: direct culling under government authority, and the use of hunting on private lands to control elk populations (though allowing a perpetual open season on elk who “trespassed” on private lands was beyond both the desire and the reach of the NPS). The *Middle Park Times* editorial may have touched a nerve, but it resulted in no practical reduction in elk populations. In 1932, the Grand County Board of County Commissioners again begged the State Game and Fish Commissioner to declare an open season on deer and elk, arguing that any “further increase” in deer and elk populations in the county “would work great damage to their natural winter and summer range, as well as to the crops, range and hay stacks of the ranchers.” When the state wildlife agency responded to the

²⁸ Ibid.

commissioners' pleas with a cold shoulder, Grand County leaders took the highly unusual step of sending the state a second petition. But this, too, was ignored.²⁹

Beaver Trouble, Fauna No. 1, and the Ambiguities of Ecological Management

Resurgent beaver populations in the Kawuneeche, like skyrocketing elk numbers in Estes Park and Middle Park, also came to the notice of the National Park Service. By the time Fred Packard launched a series of "investigations of wildlife problems in Rocky Mountain National Park" for the Service in early 1939, the valley's beaver had continued their rebound from their early-nineteenth-century nadir.³⁰ Packard found "a single colony of beavers at Poudre Lake, and between Lulu Townsite and the Holzwarth Ranch, several miles below where the national park boundary crosses the valley, colonies occur almost regularly." Packard "estimated that approximately 600 beavers live in this valley within the national park," with smaller populations in various tributaries of the Colorado. Packard claimed: "Technicians who are familiar with conditions in other national parks ha[d] told [him] that Rocky Mountain National Park probably supports more beavers than any other. This assumption is probably correct," Packard reasoned, "since there is an abundance of food and building material on many of the important streams, and almost every stream that can support beavers is stocked to capacity or is overpopulated."³¹

Grand Lake Ranger Otis Doiles echoed Packard's assessment the Kawuneeche's attractiveness to

²⁹ Petitions, May 2 and Sept. 6, 1932, *Proceedings of the Grand County Board of County Commissioners*, book 4, 342.

³⁰ Beaver populations throughout Colorado, in fact, had "staged a comeback" due to "reduction in natural predators and increased protection." Barrows and Holmes, *Colorado's Wildlife Story*, 291.

³¹ Fred M. Packard, "A Survey of the Beaver Population of Rocky Mountain National Park, Colorado," *Journal of Mammalogy* 28 (Aug., 1947), 225-26.

beaver in his monthly report for October, 1939: “Beaver are numerous in nearly all of the Colorado River from Phantom Valley on down.”³²

Ranger’s monthly reports such as Doiles’ show that growing beaver populations caused no shortage of headaches for landowners and Service personnel alike. By 1940, Ranger Fred McLaren was describing a situation rapidly spiraling out of control: “The Beaver are increasing so fast that they are giving the Ranchers on the North Fork of the Colorado River considerable trouble,” McLaren informed his superiors.” Dams built by beavers were “flooding hay meadows and roads and daming [sic] irrigating ditches.” McLaren and other Park Service employees had dynamited several dams; they also “transplanted” one beaver from a live trap to Grand Lake’s East Inlet.³³

Neither human transplantation or the more dubious use of explosives made the beavers go away. Rangers reported still more extensive trouble on the Kawuneeche’s settled bottomlands in 1941: “Green Mt. Ranch, Henery [sic] Rhone and Holzwarth all complained about Beaver Damage on their Property.”³⁴ It is not clear whether rangers responded to the landowners’ complaints out of a sense of neighborliness, a shared belief that the work of beavers had no right to unmake the work of human beings, or a desire to save wildlife from destruction at the hands of ranchers who shared Clark Renshaw’s frustrations with beavers, but not the unfortunate homesteader’s misgivings about killing the creatures without a state permit. Ranger McLaren and an associate tore out several dams at Green Mountain Ranch; McLaren also emphasized the need to “study . . . the damage that Beaver are doing on the Colorado River. At the Green Mt. Ranch the Beaver are flooding the hay meadow and it is impossible to harvest the hay. On Rhone’s property the Beaver are flooding small groves of Pine and Spruce trees and the

³² RMR, Oct. 1939, temp. box 68:025.

³³ RMR, Sept. 1940, RMR, temp. box 68:024. See also RMR, Oct. 1940, *ibid.*

³⁴ RMR, Sept., 1941, temp. box 68:023.

trees are dying. At Holzwarth Ranch the Beaver are flooding roads and trails.”³⁵ Industrious rodents, it seemed, were jeopardizing the control settlers desperately wanted to exert over the Kawuneeche environment.

Park officials brought a state trapper into the Kawuneeche; McLaren noted in his report for September, 1941, that the game official had removed 28 beaver from the Colorado River and its tributaries.³⁶ And yet Kawuneeche landowners continued to complain vociferously to RMNP officials about beaver damage. Efforts to transplant the animals and destroy the “engineering works” that Mills had celebrated three decades earlier provided only temporary relief; often times, it took the remaining beaver just weeks to make their ways back to the Kawuneeche and reconstruct dams. Thus despite repeated efforts by the state trapper, Fred McLaren, and other government officials, the ranger’s monthly report for November, 1943 nonetheless declared that the problems caused by abundant beaver populations, far from improving, was in danger of causing still more harm to Kawuneeche Valley landowners:

Beaver were doing some damage untill [sic] the streams froze up solid; at Phantom Valley they put a dam accross [sic] the river and threatened to flood their corral; at Holzwarth Ranch they put a dam accross [sic] the river and flooded their road; at Godchaux Ranch they damed [sic] an irrigation ditch; just below the bridge on the Bowen Gulch road they put a dam accross [sic] the river and floded

³⁵ Ibid.

³⁶ Ibid. For more on efforts by the State Trappers Service to trap and transplant beaver during this era, including an ingenious technique for parachuting beavers into “high, inaccessible lakes,” see Barrows and Holmes, *Colorado’s Wildlife Story*: “As sacks of freshly trapped beaver were hauled in and dumped,” these authors write of the 1930s, “teams of men skinned and stretched the hides. Small flasks of ‘skinning oil’ set the mood, similar to the old rendezvous days, and stories and skinning knives would fly” [297]. Since landowners typically received 50% of the furs taken by lethal trapping, they had some incentive to lean on the NPS to bring in state trappers.

[sic] the Saw Mill road; at the Harbison Ranch they continued to dam up their ditch causing it to overflow and flood timber land.³⁷

The Kawuneeche Valley's beaver caused localized problems; these, in turn, prompted localized responses. At the same time as these events were unfolding on the ground along the Colorado River bottomlands, though, a larger debate about beaver policy was erupting in Rocky Mountain National Park and throughout the NPS. Fred Packard, the mammalogist who had estimated the valley's beaver population at 600, recommended in 1942 that rangers trap and transplant the rodents, much as they had already begun to do in response to landowner complaints and requests. V. H. Cahalane, the official in charge of the National Park Service's wildlife division, responded with a critique of the underlying philosophy underpinning Packard's recommendation.³⁸ Cahalane concluded his letter with a long quote from *Fauna No. 1*, the epochal 1933 report by NPS biologists George Wright, Joseph Dixon, and Ben Thompson—a report that initiated the use of serious ecological research to guide resource-management decisions in the National Parks.

A beaver is not just an animal which builds houses and dams. It is an animal which moves into a region, increases in numbers until it exhausts its food supply, then moves elsewhere. Vegetation gradually reinvades the deserted pond, and the whole cycle of plant succession is repeated until suitable beaver food is once more produced, beavers move in again, and the whole cycle starts over. This is

³⁷ RMR, Nov. 1943, temp. box 68:021.

³⁸ The correspondence does not make it clear what Cahalane's unit was called, hence the lower-case "d" on "division." V. H. Cahalane to Fred Packard, Nov. 3, 1942, copy in folder: "Beaver Studies," Box LL—Wildlife Management Monitoring Research, Natural Resource Archives, RMNP Archives.

the way much of our meadow land has been formed. Many different forms of wildlife, ranging from small aquatic insects to waterfowl, muskrat, mink, and even moose, follow in succession the changing habitats produced by the beaver cycle. No individual phase of the beaver cycle is more destructive or more climax than the rest; it is a continuous chain of plant and animal succession, each phase of which leads naturally to the succeeding steps; any one moment in the cycle signified all the rest.³⁹

Fauna No. 1, as the passages Cahalane chose to excerpt shows, expressed a long-term ecological vision—one in which natural processes inexorably unfolded through slow, more or less stable and cyclical series of steps, rather than through stages progressing toward a climax state at which the latent potential of the ecosystem finally became manifest.

Cahalane went on to quote a passage in which Wright and his colleagues implicitly criticized prevailing aesthetic notions; if “no individual phase of the beaver cycle [wa]s more destructive or more climax than the rest,” then every phase should be welcomed by Park Service managers as a necessary component of a larger whole.⁴⁰ *Fauna No. 1* went on to draw out this point: “It is this marvelous change, variety and orderly succession of nature which makes nature what it is. It is this for which man comes”—and, implicitly, *not* for mere scenery. For witnessing nature at work “restores in him a certainty, which he needs. This is recreation, and it is the great value of the national parks.”⁴¹ In a decisive attempt to steer the agency away from its

³⁹ Ibid., quoting from George M. Wright, Joseph S. Dixon, and Ben H. Thompson, *Fauna of the National Parks of the United States: A Preliminary Survey of Faunal Relations in National Parks*, Contribution of Wild Life Series Fauna No. 1 (Washington, D.C.: GPO, 1933), 112-113. The report can be viewed online at: http://www.nps.gov/history/history/online_books/fauna1/fauna4b2.htm .

⁴⁰ Ibid.

⁴¹ Ibid.

prevailing policies, Wright, Dixon, and Thompson advocated a reordering of management priorities: Park managers could best serve scenic and aesthetic goals, they suggested, by granting primacy to the perpetuation of natural ecological processes.

Wright, Dixon, and Thompson employed the beaver to articulate their new conception of the Service's responsibility to the ecosystems it oversaw. But the NPS biologists did so in response to a specific proposal that was analogous to the one Fred Packard made to Victor Cahalane in the early 1940s. In the Hidden Valley area, off of Trail Ridge Road on Rocky Mountain's east side, a large beaver colony had dammed the river and consumed virtually all of the available food supply. Biologists opposed the removal of this colony, preferring instead that the animals be employed as a sort of living exhibit. Park visitors, they believed, could learn about the important roles beaver played in the park's ecology by watching the colony at work; in the process, they could gain otherwise inaccessible insight into the workings of Nature writ large. Thus it should come as no surprise that in the very last lines of his letter, Cahalane returned to quote *Fauna No. 1* once more:

While this may seem a long step from the beavers of Hidden Valley, they nevertheless are an integral part of the complex chain, and they have been considered so important a part that it has been suggested that they be changed and controlled for the sole purpose of enhancing their value in the chain. But if they were controlled, there would be nothing left except the interesting animal which builds houses and dams in its picturesque lake—a new thrill on the new mountain road. If there is to be any permanent value in our parks, they must be allowed to

run their orderly succession of change which produces the marvelous variety of life.⁴²

Ecological change, Cahalane joined the authors of *Fauna No. 1* in asserting, was messy and not always pretty. In this regard, the functioning of nature stood in sharp distinction to the dictates of the capitalist economy that incessantly cast the public as consumers, then promised them “a new thrill on a new mountain road.” Wright and his collaborators urged a more complex ethic—one in which human beings might grasp that nature, for all its ugly phases, nonetheless possessed an underlying order and unity that was not just elegant, but also profoundly beautiful.⁴³

Perhaps the most difficult challenge raised to the biologists’ emerging ethic was both practical and theoretical: Were national park ecosystems such as those in the Kawuneeche, which reflected a long history of human-caused change, still “natural” in any meaningful sense? The NPS’s regional director, in a memo to the RMNP Superintendent in response to Victor Cahalane’s letter, distinguished between the validity of the desires *Fauna No. 1* articulated and the difficulties involved in applying the biologists’ reasoning to actual management. While “we agree in principle with the quotation from *Fauna of the National Parks No. 1*,” the director could not abide by the document’s practical implications: “We should not lose sight of the fact that owing to man’s interference with nature’s natural cycles, it is conceivably possible that if all beaver populations were left to propagate unhampered, some other equally important plant or animal species might be destroyed.” As the director was writing in 1942, he opined that “the beaver problem in Rocky Mountain National Park relates primarily to an over-population adjacent to private holdings and resulting in considerable damage to private property.” This

⁴² Ibid.

⁴³ Aldo Leopold’s “land ethic” expressed much the same set of ideas.

raised a second objection to *Fauna No. 1*: When “over-population” of the creatures inflicted “considerable damage” on a settled landscape, biologists could no longer legitimately offer beavers protection under the sanction of “nature”—no one could expect John Holzwarth to throw up his hands when beavers flooded the hay meadows he had laboriously cultivated, resigning himself that such flooding simply embodied a stage in nature’s beautiful cycling.⁴⁴

As beaver populations continued to hold steady or perhaps even expand during the 1940s and ‘50s and the NPS accelerated its purchases of private inholdings in the Kawuneeche, though, troubles with beavers spread from former homesteads to parklands. When rangers, who remained the officials most responsible for Park Service practices in the Kawuneeche, balanced *Fauna No. 1*’s nuanced and almost cosmic appreciation of nature’s cycles against the various exigencies that governed their everyday lives, their scales rarely tipped toward enlightened ecological thinking. Efforts to control troublesome beaver continued and even intensified in the wake of Cahalane’s unsuccessful efforts to apply the thinking of George Wright and his associates to Rocky Mountain National Park. In September, 1945, McLaren reported: “Mr. Carl Nelson, owner of Green Mountain Ranch, complained several times about Beaver Dams on Onahu Creek that make it impossible for him to control irrigation water. The Dam that is causing the greatest amount of trouble,” McLaren explained, “was blasted out twice and removed by hand several times but the beaver built it up within two days after it was removed and some times [sic] it was rebuilt the next day.”⁴⁵ In the competition between the beavers’ work of construction and the government’s work of destruction, the rodents had the government men outnumbered.

⁴⁴ NPS Regional Director, memorandum for RMNP Superintendent, Nov. 9, 1942, copy in folder: “Beaver Studies,” Box LL—Wildlife Management Monitoring Research, Natural Resource Archives, RMNP Archives.

⁴⁵ RMR, Sept. 1945, temp. box 68:019.

Fast forward to 1956, and the same situation prevailed, more or less unchanged. With summer turning to fall, beavers escalated their building, leading Kawuneeche Valley landowners to complain of what western district ranger Merle E. Stitt called “beaver trouble.” Rangers responded with the customary ineffectual strategies, destroying beaver dams, then trapping and transplanting the offending rodents.⁴⁶ The next year, though, “beaver trouble” spread, from private lands into the National Park. Now thrust into the same position as John Holzwarth, Henry Rhone, and other private landowners, the Service responded with the same resolve: the offending animals had to go, *Fauna No. 1* be dammed. In the summer of 1957, the *Estes Park Trail* reported that beaver on RMNP’s west side were “doing such a thorough job on their dam building that Park officials are beginning to worry about the safety of the roads in the area.” Park regulations, the *Trail* informed readers, necessitated approval from both the park engineer and the park naturalist before rangers could remove the beaver dam in question, “since removing the dam would involve molestation of wildlife habitat.”⁴⁷

Whether the dam was subsequently removed is unclear; but in either case, the beavers continued their work. In fall, 1958, ranger Wayne B. Cone reported that “Beaver activities along Timber Creek and Onahu Creek continue to present a control problem.” Cone’s report on this “control problem” circled back to much the same concern that the biologists who authored *Fauna No. 1* had attempted to dismantle back in 1933: In addition to damaging ranch properties and threatening park roads, Cone noted with some alarm that the beaver were “threatening a fine group of aspen to extinction.”⁴⁸ Detectable in Cone’s choice of words is a profound reconfiguration of the relationships Mills had meditated upon a half-century earlier. To Mills, beaver were hard-working, intelligent, human-like creatures whose labors aided the larger goals

⁴⁶ RMR, Sept. 1956, temp. box 98:004.

⁴⁷ “Beaver Creating Road Problem on Park’s West Side,” *Estes Park Trail*, July 5, 1957, 3.

⁴⁸ RMR, Oct. 1958, temp. box 98:004..

of conservation. Cone also likened beavers to people, at least implicitly, since in the Cold-War context in which the ranger wrote, man was widely recognized as the only organism capable of “threatening . . . to extinction” another species. Cone worried that beavers jeopardized the future of an important tree species, placing at risk both aesthetic values and forest health.



Beaver pond near Phantom Valley, 1964. The dams these rodents built backed water up; this caused trouble for private landowners intent on cultivating hay in the Kawuneeche, but ponds such as this played important roles in willow regeneration while offering habitat for cutthroat trout and other species. Photographer unknown, catalog #4-D-230, RMNP Photo Collection.

It would be dangerous to place too much analytical weight on the hurried jottings made by a single ranger in the course of fulfilling his bureaucratic duties. Yet Cone’s choice of words can be taken to reveal the ongoing salience of an enduring dilemma Rocky’s beaver problem. Should Park managers sit idly by and let the creatures re-engineer the landscape? If they did, how would they explain to Park visitors that the scenes they viewed as unsightly and inconvenient—beautiful aspen forests reduced to stumps that looked like giant upended pencils stuffed in the ground, muddy flats that provided ideal breeding grounds for mosquitos and other

airborne pests, roads submerged under mud and water—represented “one moment” of a “cycle,” a moment that “signified all the rest”? Such a course of inaction—of what later park officials would call “natural regulation”—would have posed challenges enough to true believers in the ecological principles articulated in *Fauna No 1*. For the Wayne Cones of Rocky Mountain, and for the many other Park officials who believed that their job was to keep visitors happy while preserving the National Park in more-or-less the same condition in which they had found it, letting beavers do their own thing was simply inconceivable.⁴⁹

Hands-Off: Elk in the Kawuneeche from Lethal Control through Natural Regulation

While the growing populations of beaver in the Kawuneeche seemed to demand the attention of Park Service officials, the valley’s growing elk herds kept an altogether lower profile. Well into the 1990s, Rocky Mountain National Park officials and scientists either ignored the west side elk entirely, or assumed that solving the massive elk problems on the east side would remedy whatever local ecological deterioration the ungulates had inflicted on the Kawuneeche. Most internal Park Service memoranda, reports, and correspondence concerning Rocky’s elk populations and their control joined virtually all scholarly and public debates on the subject in addressing only the travails of the Park’s east side, where rangers and biologists first noticed signs of overpopulation in 1930. Park management documents repeatedly restricted the geographic scope of their discussions of elk management at Rocky to the east side and Estes

⁴⁹ This mentality remains largely in force across most of the American landscape; even Dietland Müller-Schwarze, a wildlife biologist who expresses a “hope” that his work would “help readers to understand the environmental role of the beaver worldwide and contribute to finding ways to coexist with this extraordinary *ecosystems engineer*,” helpfully suggests in a recent book: “It is recommended to trap these beavers annually, preferably in live traps, before they are firmly entrenched and cause unbearable damage. . . . Because nuisance beavers are young and their colonies are small, the pelts may not be in their prime at the time of the nuisance complaint and are worth little,” meaning that government trappers, rather than private trappers, would have to be enlisted. Müller-Schwarze, *Beaver*, ix, 181.

Valley; Stanley Broman's 1954 report claimed that the elk of "the Grand Lake area offer no problem, since they ... leave the park and are held to a fairly constant level by hunter kill in areas adjacent to the park"; the "Elk Management Plan" of 1960-'61 specified that "the problem area is located east of the Continental Divide," while a 1962 report explicitly cited the "Eastern Rocky Mountain Elk and Deer Herds" as its subject.⁵⁰

Fortunately for our purposes, rangers occasionally made note of elk in the Kawuneeche in the course of their monthly reports from the 1930s through the 1950s. Though circumstantial, these snippets offer some suggestive glimpses into elk dynamics in the valley during these decades. In the summer of 1938, for instance, ranger Fred McLaren took time from his beaver-control activities to note: "There have been more elk seen in this District than in years gone by. They have been reported in all valleys and along all streams."⁵¹ The next month, McLaren's counterpart, William Supernaugh, noted: "The elk are in fine condetion [sic] this year and are ranging [sic] over a larger area than I have ever seen before." Supernaugh had sighted "at least twelve along the Thunder pass trail and they may be found along all streams and in the open glades over the entire district."⁵² None of the rangers speculated about the causes driving the growth they perceived in elk populations. A few possibilities, though, bear mention: the institution of an open season on elk by Colorado game officials in the early 1930s may have helped to drive more elk from Middle Park into the Kawuneeche; overpopulation on the east side of Rocky may have led elk to migrate over the Continental Divide in larger numbers; or the

⁵⁰ Stanley E. Broman, memorandum to RMNP superintendent, "Report on the 1953-54 Elk-Deer Reduction Program in Rocky Mountain National Park," Dec. 14, 1954, folder N 1427: "Wildlife, Elk," Box 14, RMNP Papers-NARA; "Elk Management Plan: Rocky Mountain National Park," Jan. 1, 1961, *ibid.*; "Long Range Management Plan for the Eastern Rocky Mountain Elk and Deer," Oct. 2, 1961, *ibid.*; and Neal R. Guse, "Effective Management Program Requirements for Eastern Rocky Mountain Deer and Elk Herds," *ibid.*

⁵¹ RMR, June, 1938, temp. box 68:026.

⁵² RMR, July, 1938, *ibid.*

rangers may simply have followed a local consensus that bore no relation to actual elk population movements.

Whatever the case, mentions rangers made of elk wintering in the Kawuneeche only add to the mystery. In December, 1938, McLaren noted in passing that “The last two times that I was up to Phantom Valley I did not see any fresh sign of the Elk that have wintered near the C. C. Camp [sic] the last three years.”⁵³ In February, 1943, McLaren remarked that “This is the first time in several years when no Elk or fresh Elk sign was noticed on the North Fork of the Colorado River.”⁵⁴ McLaren’s observations reveal two important facts: a) though the primary winter range for Rocky’s elk herds lay in and around Estes Park, some animals were wintering in early 1943 in the Kawuneeche; and b) during “several years” preceding McLaren’s observation, the animals did not always winter in the valley, or if they did so, they managed to elude detection by McLaren, an unusually observant ranger.

Throughout the 1930s and early 1940s, rangers noted, in McLaren’s straightforward words, that “Elk are increasing.”⁵⁵ And thus it was but a matter of time before the animals, like beavers before them, came into conflict with Kawuneeche settlers. McLaren reported the first signs of trouble in 1938: “The Harbisons have complained about them eating in their meadow before the hay was cut.” The Fisher Ranch also reported damage to one stack of hay that winter.⁵⁶ Subsequent reports suggest that elk populations in the Kawuneeche continued to grow. “Elk are increasing in this area very rapidly,” McLaren wrote in November, 1941. Then he provided some rough statistics that also revealed the sources of his information: “One herd of 11

⁵³ RMR, Dec., 1938, *ibid.*

⁵⁴ RMR, Feb. 1943, temp. box 68:021.

⁵⁵ RMR, Oct., 1938, temp. box 68:026.

⁵⁶ RMR, Dec., 1938.

bulls was seen near Holzwarth Ranch; One herd of 10 cows and 1 bull on the Harbison meadow; One herd of 4 bulls and 1 cow just above Phantom Valley Ranch.”⁵⁷

Rangers, it seems, almost always encountered elk on or near the privately-held lands of the Kawuneeche’s dude and guest ranchers. In part, this was probably because McLaren and his comrades restricted most of their patrols to low-lying lands accessible by automobile; rangers also had the benefit of additional eyes in these settled places. Still, it seems likely that more than happenstance lay behind the concentration of elk sightings on ranchlands. Though ranchers had removed willow along stretches of the Colorado River bottomlands, sufficient thickets remained to make these places particularly attractive to elk. By the 1930s, moreover, the Never Summer, Phantom Valley, and other ranches boasted cultivated, irrigated hay meadows, not to mention stacks of mowed hay that some elk began to raid during this period.⁵⁸ As the NPS acquired more rights to land and water in the Kawuneeche, there is some indication that Park employees even went so far as to water hay meadows in order to increase the grass supply available to elk. In July, 1945, Fred McLaren informed Park management that “Several man days were used in the irrigation of Elk pasture by both the Harbison and Selack [sic] ditches.”⁵⁹ Whether this was regular practice or a departure from the ranger’s routine is not at all clear. Regardless, park officials on the west side may well have encouraged the growth of “Elk pasture” during the very same period that their counterparts on the east side, blaming elk for damaging willow and aspen

⁵⁷ RMR, Nov., 1941, temp. box 68:023.

⁵⁸ In early 1949, John Holzwarth “complained of 4 head of Elk jumping into his stack yard and eating his hay.” McLaren noted that though “Holzwarth’s fence is high enough to keep out his livestock . . . the elk can jump it with ease.” RMR, Jan., 1949. These accounts square with Murie’s claim that “the ordinary cattle fence is no obstacle to elk; the animals cross such exposures at will.” *Elk of North America*, 112.

⁵⁹ RMR, July, 1945, temp. box 68:019.

communities, were gunning down the ungulates as part of the elk management policy known as “lethal control,” in which rangers attempted to reduce elk populations by shooting the animals.⁶⁰

Tracking the rise and fall of lethal control elk on Rocky’s east side can help us better understand how this checkered history shaped subsequent NPS efforts to manage elk in the Kawuneeche. The NPS initially attempted to solve local overpopulation of elk and other ungulates on the lands it managed by actively participating with other federal and state agencies in restoration programs in which large herbivores were captured in places where their numbers had grown precariously large and transplanted to restoration sites. Such programs, though, worked too well, as events at Rocky showed. The Park’s main elk herds on the east side, after all, were mostly or entirely descended from the elk transplanted from Wyoming in the 1910s. By the 1930s, many other park units were facing similar problems with elk and deer populations that seemed to have grown too large for their own good.

When George Wright and his team of biologists sought to chart a dramatic new course of wildlife management with *Fauna No. 1*, they set the stage for an important shift in elk policy at Rocky. We have already seen how Victor Cahalane of the NPS wildlife division invoked this pathbreaking report in relation to “beaver trouble” at the Park, prompting a searching discussion of the theoretical and practical dimensions of a more ecologically-informed management paradigm in the NPS; a later letter from NPS Director Conrad Wirth concerning elk management throughout the national parklands offers similar insights on the Service’s struggles to translate the vision of Wright, Dixon, and Thompson into action.

⁶⁰ The policy began in winter, 1943-’44, but “lacked general public support and was abandoned without much success.” The next winter, 301 animals were killed. In 1949-’50, another 340 elk were killed; “since that time,” Guse and colleagues reported, “annual reductions were made on a maintenance basis following cautious, but encouraging reports of minor range improvements,” with “an average of 50 animals” killed annually during the 1950s. Guse et al., “Rocky Mountain Cooperative Elk Studies: Preliminary Report, 1962-1963,” 15-16.

Writing in 1961 to Anthony Wayne Smith, executive secretary of the National Parks Association, Wirth explained that the agency's "overriding policy" regarding wildlife prior to the 1930s had been "based on the commandment, 'Thou shalt not kill,' and the inviolate sanctuary idea became firmly established as a concept in National Park management." Yet there had been a major flaw in the application of this principle. "Until about 35 years ago, this concept did not extend to the commonly recognized predators: coyote, wolves, mountain lions." In this and other respects, the NPS had operated during its early years without the guidance offered by science, particularly the new science of ecology. "Starting in the 1930's, when the science of wildlife management was emerging, the first intensive and continuing studies by trained biologists became a part of park operations." These studies "quickly produced striking evidence that there had to be a great deal more to wildlife management in the parks than the simple rule, 'Thou shalt not kill.'"⁶¹ The heart of Wirth's "great deal more" involved understanding that the charismatic megafauna NPS officials found particularly desirable actually functioned as integral components in complex and extensive webs of interaction. Fewer predators might mean more elk, but more elk would eventually mean less willow and aspen, and fewer of the beavers, birds, amphibians, and other creatures that depended on communities of these plants for food, shelter, and habitat.

Wirth, like Cahalane before him, quoted extensively from *Fauna No. 1*, the document that clearly set the terms for the Park Service's shift from a policy of "thou shalt not kill" to one in which the NPS sought to reduce ungulate overpopulation through lethal means, if such killing served larger ecological purposes: "The rigors of civilization have injured the fauna of the country as a whole," Wright et al. had reasoned. "In a National Park the damage cannot be

⁶¹ Conrad Wirth to Anthony Wayne Smith, Feb. 20, 1961, reprinted in *National Parks Magazine* 35 (May 1961), 14, 19.

undone by policing a boundary line. This is protection and it is necessary,” the biologists conceded, “but it does not correct conditions already operative within the park. These must be sought out where they are doing damage and dealt with there. This is management, and the danger that it may be overdone is not sufficient reason for doing nothing. Recognition that there are wildlife problems is admission that unnatural, man-made conditions exist.” The Service’s desire to protect and encourage elk and other large herbivores, *Fauna No. 1* declared, violated known ecological principles. “Therefore, there can be no logical objection to further interference by man to correct these conditions and restore the natural state. *But* the care must be taken that management does not create an even more artificial condition in place of the one it would correct.”⁶²

The biologists’ unsettling caution—that “*but*”—succinctly encapsulated the raft of problems that history posed to ecology in Rocky and other national parks. Past human actions had drastically altered wildlife dynamics throughout the American landscape. “Un-natural, man-made conditions” caused “wildlife problems.” These, in turn, demanded human intervention to “restore the natural state” on national parklands. And yet NPS managers also had to understand that however well-intentioned their restoration efforts might be, their actions could actually make bad situations worse. Wirth found this caution as salient in 1961 as it had been back when the biologists’ work first appeared in 1933: In places such as the Kawuneeche Valley, which had already experienced fur-trapping, mining, homesteading, predator eradication, and other interventions since Americans arrived on the scene, and that had been inhabited for millennia by the peoples of the Mountain Tradition, the Nuche, and other Native Americans, how was the Park Service to sort out what was “natural,” and what counted as “artificial” or “man-made”?

⁶² Ibid. (emphasis added), quoting from Wright, Dixon, and Thompson, *Fauna of the National Parks*.

How, moreover, could the agency avoid “creat[ing] an even more artificial condition in place of the one it would correct”?

Fauna No. 1, Wirth pointed out to Smith of the National Parks Association, proceeded to specify that ungulate populations “occupying a deteriorated range shall not be permitted to exceed the reduced carrying capacity and, preferably, shall be kept below the carrying capacity at every step until the range can be brought back to original productiveness.” Wirth then stepped back to give his interpretation of the history that had unfolded since *Fauna No. 1*: “The National Park Service has been consistent since the early 1930’s in its wildlife management objectives,” he wanted Smith to believe.⁶³ Since that time, the agency had generally sought to achieve its objectives of preventing overabundant ungulates from overgrazing their ranges within the national parks through lethal control. First implemented at Yellowstone in the 1930s, and at Rocky in 1944, lethal control involved the deliberate culling of elk populations within park boundaries, either by regular NPS rangers or state game officials temporarily commissioned by the NPS as deputy park rangers.⁶⁴ “The objectives themselves are proven and sound and there is no intent of changing them now or in the future. The methods used to achieve these objectives,” Wirth conceded in an obvious allusion to the growing clamor by sport hunters who sought to participate in elk and deer control programs within the National Parks, “must be made more effective.” Toward that end, the NPS director informed Smith, he had initiated a review of the agency’s wildlife management policies.⁶⁵

⁶³ Ibid.

⁶⁴ On Rocky, see note above. On Yellowstone, see Ted Trueblood, “Too Many Elk,” *Field and Stream* (July 1963), 36-39, with unpaginated continuation; and Alston Chase, *Playing God in Yellowstone: The Destruction of America’s First National Park* (San Diego, New York, and London: Harvest Books, 1987), 27-37.

⁶⁵ Wirth to Smith, Feb. 20, 1961. For more on this letter and its context, see Sellars, *Preserving Nature in the National Parks*, 195-198.

This exchange between Wirth and Smith unfolded toward the beginning of a searching national debate regarding ungulate management in the National Parks. Wirth maintained that the goals of NPS wildlife policy were “proven and sound,” but he also indicated a need to change “the methods used to achieve these objectives.” The overriding problems with lethal control, though, were not ecological, but political. At Rocky, as in other NPS units, the program largely delivered the benefits scientists and managers hoped that it would. In response to a 1955 study by Stanley Broman on elk and vegetation on Rocky’s east side, one of Broman’s superiors highlighted the biologist’s “heartening” findings regarding “the improvement in the vegetative cover that has resulted from control operations.” He “agree[d] with Mr. Broman that dispersal of sedentary bands” as a consequence of lethal control and the fear of humans that the policy restored “ha[d] contributed much to range recovery. Perhaps this is even more effective than killing the animals.”⁶⁶ Whatever the case, the important point was that park policies succeeded at reducing elk populations and changing elk behavior; as a result, the overburdened vegetative communities of Rocky’s east side showed clear signs of rejuvenation between the mid-1940s and the early 1960s.⁶⁷ In the case of Rocky Mountain National Park, Wirth’s claim that the NPS needed to revisit the methods it employed in order to achieve the “proven and sound” objectives of restoring balance between elk and vegetation was disingenuous at best. The problem with lethal control was *not* that it failed to achieve its stated goals, but that it was becoming politically

⁶⁶ John S. McLaughlin to RMNP superintendent, Jan. 4, 1955, folder N 1427: “Wildlife, Elk,” box 14, Numerical Subject Files, 1953-1965, NARA-Denver. On the tendency of elk to avoid hunters, see Adams, “Migration,” 306.

⁶⁷ Numerous sources document the passivity of elk when protected from hunting. Generally, see Valerius Geist, “Adaptive Behavioral Strategies,” in Thomas and Toweill, comps. and eds., *Elk of North America: Ecology and Management* (Harrisburg, Pa.: Stackpole Books, 1982), 244, 276-77. On RMNP specifically, see Broman, “Report on the 1953-54 Elk-Deer Reduction Program.” See also Gorman R. Wilson to James V. Lloyd and Henry During, April 4, 1956, File N1427 “Wildlife, Elk,” box 14, Numerical Subject Files, 1953-1965, NARA-Denver: “Today the browse is making a satisfactory recovery, grasses are improving and the condition and quality of the game animals show even more improvement.”

unpopular because of a complex concatenation of dynamics. The year after Wirth wrote to Smith, these dynamics coalesced. The resulting firestorm led to an abrupt about-face in NPS elk management; in the process, it helped to lay the groundwork for the willow die-off that would begin to afflict the Kawuneeche in the late 1980s and early 1990s.

From across the United States, a range of constituencies began in the late 1950s to raise a chorus of objections to lethal control. Tourists motivated to visit the National Parks in no small part because they wanted to elk and other impressive specimens of America's native fauna in their wild haunts often had difficulty understanding why the NPS would gun down the very creatures they were investing time and money to see. Many sportsmen, meanwhile, found it offensive that only government agents, not private citizens, had the privilege of shooting elk within the national parks—an objection that resonated powerfully with a pervasive fear in Cold War America that big government portended a socialist or communist takeover of the American machine of state. For their part, business owners in national park gateway communities opposed any policy that tended to anger hunters and other tourists; and they presumably understood that opening the parks to public hunting would have increased visitation, particularly during late fall and early winter, after the summer surge of visitors had dwindled to a trickle. Political officials and state game officials, ever anxious to appease hunters, business owners, and other voters, argued that the states and not the federal government had jurisdiction over wildlife populations. And advocates of so-called “humane” treatment for animals objected on moral grounds to the government's embrace of lethal control.⁶⁸

⁶⁸ In addition to the sources quoted and cited in the passage that follows, see Trueblood, “Too Many Elk”; Sellars, *Preserving Nature in the National Parks, 195-201*; Chase, *Playing God in Yellowstone*, 31-48; Barnet Nover, “Dominick Asks Protests over Park Elk Slaughter,” *Denver Post*, Jan. 3, 1962, clipping in folder N1427: “Wildlife, Elk,” box 14, NARA-Denver; “State Game Dept. Assails Shooting of RM Park Elk,” *Ft. Collins Coloradoan*, Jan. 12, 1962, clipping in *ibid.*; H. Robert Krear, “Elk Kill in Yellowstone,” *Denver Post*, Jan. 14, 1962, clipping in *ibid.*

The Park Service, astutely attempting to keep these various strands of opposition to culling isolated from each other, tried to keep its ungulate control problems out of the public eye. Rangers at Rocky, Yellowstone, and other parks conducted hunts when visitation was minimal, closed off areas where control activities were in progress (a move that dovetailed with their legal responsibility to protect public safety within the parks), and hauled away elk killed by rangers in unmarked trucks, with tarps covering the carcasses.⁶⁹

Such measures seemed to work: public opposition to lethal control of elk populations in Rocky Mountain and other parks remained relatively mild and unorganized. Then, in January of 1962, as Ted Trueblood wrote in *Field and Stream*, “all hell broke loose.”⁷⁰ The trouble started with Yellowstone; almost instantly, though, it spread to engulf Rocky. The result was a premature turn away from lethal control and a halting search for a defensible alternative. This turn of events would lead by the 1970s to sharply increasing elk populations in Rocky Mountain, with dire consequences for the Kawuneeche Valley’s willow and beaver.

Several developments over the course of 1960 and 1961 helped to lay the groundwork for the elk management crisis of 1962. Wirth’s 1961 letter to Smith reflected two of these developments: Conservation organizations began asking harder questions about NPS wildlife management policies, and NPS officials from Wirth on down began to reevaluate the methods by which the Service tried to control elk and deer.⁷¹ Such discussions among a relatively small and rarefied group of scientists, bureaucrats, and activists would almost certainly have proceeded quietly and beyond public view, if not for a move by Lemuel “Lon” Garrison, Superintendent of

⁶⁹ Gorman R. Wilson of the Colorado Game and Fish Commission, for instance, noted that “having worked on this control project since it’s [sic] start in 1949, I have learned that there are many things to be considered other than killing a given number of deer and elk.” Among the “more important,” Wilson claimed, was “being careful with butchering mess near the roads, and not making a show of dressed animals in transit.” Wilson to Lloyd and Daring, April 4, 1956.

⁷⁰ Trueblood, “Too Many Elk,” 36.

⁷¹ Sellars, *Preserving Nature in the National Parks*, 195-99.

Yellowstone and an ardent opponent of sport-hunting. In January, 1962, Garrison, with backing from NPS superiors who badly misjudged the fragility of public support for lethal control, ordered his staff to embark on a massive killing spree. Garrison hoped this campaign would cull roughly 5,000 elk, about half of Yellowstone's northern herd, thus bringing the herd's population back into line with the range's estimated carrying capacity.⁷² Rangers would fall just short of Garrison's goal, but not before their efforts ignited a national controversy that forged a powerful coalition of lethal control's numerous but previously isolated opponents.⁷³

In December, 1961, a month before Garrison launched his ill-fated culling campaign, Rocky Mountain National Park rangers had begun their own annual round of shooting elk on the winter ranges of the Park's east side. The rangers proceeded more or less as they had in previous seasons, but two recent shifts hinted at the imminent crisis over lethal control: First, the Colorado Department of Fish and Game, an agency that had long participated in lethal control measures at Rocky, no longer collaborated actively in the hunt.⁷⁴ Second, state wildlife officials now refused to facilitate the distribution of meat taken in Rocky Mountain to school lunch programs, insane asylums, and penitentiaries, as had previously been the case.⁷⁵ Though relatively minor changes in their own right, both of these departures from past practice signaled a growing rift between state wildlife managers and the NPS.

⁷² Sellars, *Preserving Nature in the National Parks*, 195-196.

⁷³ Garrison believed that the NPS had to base its wildlife management policies on better science. He advocated a "long-term study, perhaps five years" on the ecology of Northern Yellowstone," claiming that "if the Service did a 'good job based on professional research' there would be 'no valid criticism.'" Garrison warned, prophetically it turned out, that "a mediocre job based on uncertain knowledge spells failure and will provoke a continuing storm of criticism that will jeopardize far more than elk management at Yellowstone." *Ibid.*, 199. Peek and colleagues conclude that "while this [lethal control] was done in keeping with 'scientific' management, it was, to say the least biopolitically insensitive." James R. Peek, Richard J. Pedersen, and Jack Ward Thomas, "The Future of Elk and Elk Hunting," in Thomas and Toweill, comps. and eds., *Elk of North America*, 611.

⁷⁴ See "State Game Dept. Assails Shooting of RM Park Elk," *Ft. Collins Coloradoan*, Jan. 12, 1962.

⁷⁵ See folder N 1427, box 14, NARA-Denver.

Another fracture line opened just as the cull began, with a scathing column by Jim Matlack in the December 1, 1961 edition of the Longmont *Times-Call* that both reflected and channeled sportsmen's discontent with lethal control. Matlack, the newspaper's hunting expert, lambasted RMNP's plan to reduce the Park's elk herd by around 200. "Seems to me that the deer and elk belong to the public—not to the government," Matlack concluded, "and if a certain number must be killed each year the ordinary rank and file big game hunter should be allowed to put one into his own freezer."⁷⁶ Criticism from Matlack and other sportsmen may have led RMNP officials to suspend "direct elk control activities" in mid-December.⁷⁷ The controversy over elk policy still lacked traction among the broader public in Colorado, but all that changed once Yellowstone's Garrison launched the largest elk in national park history.

In early January of 1962, a speech by U. S. Senator Peter Dominick, a Republican from Colorado, reflected the rapid escalation of the elk management issue. Dominick "urged sportsmen to write the National Parks [sic] Service to protest the slaughter of elk driven from Yellowstone National Park by heavy snow."⁷⁸ The *Denver Post*, in a story that quoted Dominick freely, reported: "[P]rivate citizens also were illegally joining in 'murdering' elk. Yellowstone officials have denied any knowledge that local people are shooting the elk. They insist the shooting of 5,000 elk by park rangers is necessary." The *Post* claimed: "Sportsmen in Colorado, Wyoming and Montana have protested the killing of the elk and have asked that the animals be transferred to other locations." Dominick, displaying the widespread ignorance of Americans about public lands conservation and its history, called it "the 'height of stupidity' to set aside public land for fishing and hunting and then to slaughter animals which could provide

⁷⁶ Jim Matlack, "Were Those Shots Really Necessary?," *Longmont Times Call*, Dec. 1, 1961.

⁷⁷ Allyn F. Hanks to regional director, Jan. 15, 1962, folder N 1427: "Wildlife, Elk," box 14, NARA-Denver.

⁷⁸ Noyer, "Dominick Asks Protests over Park Elk Slaughter."

hunting.”⁷⁹ Though Dominick invoked most of the same arguments as Matlack had back in December, the senator’s public attack against the NPS represented a significant escalation in the controversy over lethal control.

John A. Carver, Assistant Secretary of the Interior under Stewart Udall, aptly called the ensuing backlash against the NPS a “crisis in public relations.”⁸⁰ By mid-January, newspapers in Colorado and other parts of the West were filled with spirited attacks against the NPS’s wildlife management policies, as well as rousing defenses of the status quo. *Denver Post* hunting columnist Cal Queal aptly captured the hyperbolic character of lethal control’s opponents: “Seldom has the National Park Service taken a worse public beating than it’s now suffering over the planned program of killing elk. Belted with charges of ineptness, stupidity, even of inhumanity, the NPS has been pictured as a ghoulish, kill-crazed monster with blood dripping from its bureaucratic jowls.”⁸¹ The *Estes Park Trail* aptly captured the ferocity of the debate over lethal control when it called “the reduction of the Northern Yellowstone elk herd . . . one of the hottest controversies of the decade.”⁸² The Colorado Commission of Fish and Game would further fan these flames in a telegram it sent to Secretary of the Interior Stewart Udall on January 12, in which it “protest[ed] the wasteful slaughter of elk in the Yellowstone and Rocky Mountain National Park herds. The commission,” the telegram continued, “strongly supports the management of these herds by limited, controlled public hunting in the parks or by trapping and transplanting the excess animals. . . . Either method,” the Commission asserted, “would be in accordance with good game management policies and would halt the needless slaughter of a

⁷⁹ Ibid.

⁸⁰ Quoted in Sellars, *Preserving Nature in the National Parks*, 200.

⁸¹ Cal Queal, “Limited Park Hunt Needed,” *Denver Post*, Jan. 21, 1962.

⁸² “How Many to an Acre?,” *Estes Park Trail*, Jan. 12, 1962

valuable natural resource.”⁸³ Yet state wildlife officials surely understood that successful elk restoration efforts in Colorado and adjacent states had already filled most viable ranges; as for public hunting within the national parks, such a policy seemed to violate both the spirit and the letter of NPS regulations.

Service officials responded to its critics by digging in their heels. Acting Regional Director George F. Bagley, for example, advised RMNP Superintendent Allyn Hanks on New Year’s Day, 1962:

[W]e recommend your immediate resumption of the full-scale direct control program to assure reaching your planned reduction goal of 200 elk this winter. This program has the strong support of the Secretary and the Director, and we sincerely hope you will be successful in effecting this management objective. As mentioned to you ..., we must at all costs prevent another excessive buildup of an elk population which might result in a massive reduction program such as that presently being carried out at Yellowstone.⁸⁴

Badly misjudging the climate outside the agency, Bagley asserted “At the present time we believe we are ‘over the hump’ as regards public acceptance of these reduction programs. We note increasing support from many sources for our wildlife management policy, and should not

⁸³ Telegram from Dewey Brown, President of Colorado Game and Fish Commission, to Stewart Udall, Jan. 12, 1962, box 15, RMNP Papers, NARA-Denver.

⁸⁴ George F. Bagley to Superintendent, Jan. 1, 1962, folder N 1427: “Wildlife, Elk,” box 14, NARA-Denver.

relax our reduction goals. We do not want to assume an apologetic attitude toward this policy,” he warned.⁸⁵

The Rocky Mountain superintendent, however, refused to lift the moratorium he had declared on lethal control. He took refuge under the umbrage of science. Hanks notified the regional director that he would continue the moratorium, “pending the outcome” of two interconnected initiatives: first, a “cooperative elk studies” program recently undertaken by park biologist Neal Guse and colleagues at the United States Forest Service and the Colorado Department of Fish and Game; and second, “the success of cooperative plans that included the possibilities of live trapping.”⁸⁶ Whether Hanks had genuine doubts about the validity of lethal control is uncertain; in any case, his decision to cooperate with other agencies on population studies and live trapping programs represented a departure from past NPS policy at Rocky.

Not surprisingly, the regional office in Omaha responded to Hanks’ intransigence with redoubled pleas for Hanks to reinstitute lethal control. Again, Hanks held his ground: “We do not believe that we should continue direct control without carefully evaluating current conditions appearing substantially altered over those existing as recently as mid-December.” Turning the principles of scientific management against the Service hierarchy, Hanks informed the regional office: “We plan to continue direct control on the strength of findings rather than for the reasons of earlier predictions that it would be necessary to reduce the elk herd by 200 animals or to satisfy deep seated convictions not to be swayed by political or public opinion developed without the benefit of facts.”⁸⁷ Hanks, in short, argued that any plans for elk reduction should be postponed until scientists had a better grasp of the ungulate problem and the available alternatives for solving it. Rocky’s Superintendent proved reluctant to accept the optimistic

⁸⁵ Ibid.

⁸⁶ Allyn F. Hanks to regional director, Jan. 15, 1962, *ibid.*.

⁸⁷ Allyn F. Hanks to regional director, Feb. 7, 1962, *ibid.*

projections of healthier animals, healthier plants, and more natural relationships between them that filled most studies on elk and vegetation in Rocky Mountain during the '40s and '50s.

As Hanks bought time by pointing out the uncertain scientific foundations for the proposed culling of Rocky's elk herds, Yellowstone Superintendent Garrison literally stuck to his guns. Rangers continued to kill elk in Wyoming and Montana, despite rising public opposition; in the process, they pushed the debate over lethal control to a crescendo. One congressman even introduced a bill forbidding the killing of any animals within Yellowstone for any reason.

Secretary Udall opposed such drastic action in favor of a time-honored bureaucratic tradition: he appointed a blue-ribbon commission to study wildlife management problems in the national parks. The so-called Leopold Report, named after commission chairman Starker Leopold of the University of California and released in March of 1963, vindicated the Park Service's ungulate control programs; "direct removal by killing," the report concluded, "is the most economical and effective way of regulating ungulates within a park."⁸⁸

Despite the Leopold Commission's clear sanction of lethal control, though, Superintendent Hanks continued to chart his own course of action at Rocky. The cooperative elk studies undertaken by Guse and his collaborators portrayed a complex set of population dynamics which presented NPS managers and their colleagues in the USFS and state wildlife department with a range of management options, each of which was plagued by considerable

⁸⁸ The report did advocate the reintroduction of native predators as a means to control ungulates, and it looked favorably upon non-lethal measures. Still, the following clause must have been music to the ears of Lon Garrison and other advocates of lethal control. "Where other methods of control are inapplicable or impractical, excess park ungulates must be removed by killing." A. Starker Leopold, S.A. Cain, C.M. Cottam, I.N. Gabrielson, and T.L. Kimball, *Wildlife Management in the National Parks: The Leopold Report*, March 4, 1963, online at: http://www.nps.gov/history/history/online_books/leopold/leopold7.htm. For an incisive analysis of the report, see Sellars, *Preserving Nature in the National Parks*, 214-217, 243-246.

uncertainty.⁸⁹ In contrast to the Leopold Commission, which made the case for lethal control with minimal qualification or equivocation, wildlife scientists in Rocky emphasized that their research yielded no clear or easy solution to the elk management crisis in the Park.

Hanks may have found these findings troubling, or he may have found that they offered him a convenient pretext for continuing the course of inaction and study that he had begun with the moratorium of mid-December, 1961. It is impossible to know, for an unexpected development effectively got the superintendent off the hook—a development that appeared to present a workable way for Hanks and his successors to sidestep the morass of elk management. The state of Colorado declared a special late elk-hunting season on game management units located outside the Park’s eastern boundaries during the winter of 1962-‘3. Sportsmen responded enthusiastically and with considerable success. By season’s end, they had killed around 400 animals, an estimated 220 of which came from the Park herd. In a letter to the regional director, Hanks could not resist a little boasting: “Although many persons expressed pessimistic views regarding” the “outcome” of the special elk season,

no one can share the same beliefs today. It has been successfully demonstrated that this was an effective management tool, both in the opinion of the Park and of the State. In this case it was used as a means of controlling surplus wildlife occupying critical winter range in the park, without actual subjection of public hunters to protected Park values and in reducing ranch depredations on private property within Roosevelt National Forest for which the State had financial responsibility.

⁸⁹ Guse et al., “Rocky Mountain Cooperative Elk Studies: Preliminary Report, 1962-1963.”

Lest superiors find Hanks overzealous, the superintendent cautioned that the special season was “only a temporary measure.” Elk populations would inevitably rebound in the wake of the special hunting season, and it would “be necessary to lay plans for the undertaking of a similar project within the next three to five years.”⁹⁰ Park managers had effectively departed from past policy, not so much through deliberate decision-making as through an ill-defined process of drift.

Meanwhile, cooperative research on Rocky’s elk continued. Fifteen animals from the park herd were transplanted to rangelands near Craig, in northwestern Colorado. Guse and his team also initiated a large-scale effort to trap and tag the animals.⁹¹ This effort yielded new findings on elk in the Kawuneeche. Though some of this research validated older hypotheses that elk who wintered on the east side primarily used the valley as a summer range, a number of animals captured and tagged on the park’s east side were eventually discovered to be wintering down valley from the Kawuneeche, near Granby and around Willow Creek Reservoir; a few also ascended the western slopes of the Kawuneeche during summer to graze on the high meadows and tundra of the Never Summer Range. Such research presented a more complex view of elk movements on the west side RMNP, showing that the Park constituted a set of habitats linked to many others in the surrounding area. This seemingly important insight, however, received little attention at the time, and subsequent researchers have continued to assume, often quite explicitly, that the only Park boundary elk persistently transgress is the jagged eastern boundary through the Estes Valley.⁹²

⁹⁰ Hanks to regional director, Feb. 25, 1963, Folder, N1427, “Wildlife Jan. 1963-Dec. 1964 Elk,” box 14, NARA-Denver

⁹¹ SMR, February, 1964.

⁹² R. Bruce Gill, “Elk Seasonal Movements,” in R.N. Denney, R.J. Boyd, E. Bucknall, W. Schuett, P.F. Gilbert, J. Cooney, L.D. Hibbs, G.D. Bear, and R.B. Gill, *Job Completion Report* (n.p.: Colorado Department of Game and Fish, 1967), 192-200. Compare the maps in this report with those from later documents, including the 2007 EVMP.

In response to Senate hearings on Yellowstone’s elk management policies initiated by Gale McGee (R-Wyo.), as well as private discussions between McGee, NPS Director George P. Hartzog, Jr., and Secretary of the Interior Stewart Udall, Yellowstone halted lethal control in the spring of 1967. In the winter of 1967-’68, the Service broadened the ban on culling to encompass RMNP—a symbolic gesture since lethal control had been mothballed at Rocky since Hanks’ moratorium in 1961. Historian Richard Sellars argues that “the policy decision arrived at by Hartzog, Udall, and McGee came not as a result of scientific findings, but because of political pressure.”⁹³ NPS officials, however, quickly moved to portray expediency as sound science in documents such as “Natural Control of Elk,” which claimed that supposedly non-human factors such as “winter food [scarcity], ... periodic severe winter weather and native predators” would successfully limit the number of elk.⁹⁴ In a 1971 paper, Yellowstone’s head biologist, Glen Cole, called the new policy “natural regulation.” Cole’s moniker name stuck, presumably because NPS officials and scientists joined the general public in a collective delusion: if ecological systems were self-equilibrating—if elk and the plants they ate could be assumed to work their way toward a stable long-term balance—then all land managers had to do was to stand aside and let nature take its course. It was a convenient management philosophy, but it owed much more to political expediency than it did to sound scientific research.⁹⁵

⁹³ Sellars, *Preserving Nature in the National Parks*, 246-247.

⁹⁴ Quoted in *ibid.*, 247.

⁹⁵ Glen F. Cole, “An Ecological Rationale for the Natural or Artificial Regulation of Native Ungulates in Parks,” draft paper prepared for the Thirty-sixth North American Wildlife and Natural Resources Conference, Portland, Oregon, March 7-10, 1971, cited in Sellars, *Preserving Nature in the National Parks*, 349 n. 118.



Beaver ponds along the Colorado River near Phantom Valley Ranch, ca. 1960s. After decades of direct control of elk populations by the NPS, the riparian zones along the Colorado River showed clear signs of the beavers' talents at ecological engineering: healthy willow populations and high water tables. Photographer unknown, n.d., catalog #4-D-204, RMNP Photo Collection.

RMNP officials put their own gloss on the policy, invoking both history and ecology in defense of a no-kill policy. “In 1943,” they wrote, “it was decided that [anthropogenic] influences on the environment of the elk had so altered the ecosystem that natural regulations no longer limited the population. . . . [But today] the elk herd is . . . being allowed to fluctuate naturally with an eventual equilibrium with the forage supply expected.”⁹⁶ A final push to trap and transplant elk at Rocky before the policy later known as “natural regulation” went into effect resulted in the capture and relocation of some 175 animals in 1967-'68.⁹⁷

⁹⁶ Quoted in Karl Hess, *Rocky Times in Rocky Mountain National Park: An Unnatural History* (Niwot: University Press of Colorado, 1993), 22.

⁹⁷ “Purpose and Need for Action,” EVMP, 16.

An early articulation of the new policy in Yellowstone had asserted: “natural regulation of ungulate populations has been defined as regulation of numbers without human influence.”⁹⁸ But this was a disingenuous way to describe the policy’s application. At Rocky, as at other national parks, the NPS actually counted less on elk-vegetation dynamics and more on sportsmen killing animals during open seasons outside park boundaries to check elk populations. From 1968 through 2008, after all, Park officials used hunting outside Park boundaries—an inextricably artificial practice—as their primary strategy for controlling elk populations inside Rocky’s borders.

As biologists, rangers, superintendents, and the broader public engaged in an ongoing debate about elk policy on Rocky Mountain’s east side between the 1930s and the early 1970s, ecological dynamics unfolded in the Kawuneeche subject to neither scrutiny nor intervention. The irony of this was only apparent in hindsight: in all the hand-wringing concerning what had gone wrong around Estes Park, no one asked what was going right along the Colorado River headwaters. Then the NPS embarked on the disastrous course of natural regulation, a policy whose utter failure to control elk populations would insure that the destructive impact of elk on willows would spread from Rocky’s east side to the Kawuneeche Valley.

Trouble Ahead: Natural Regulation in the Kawuneeche

In the Kawuneeche, the park’s “new” policy of natural regulation seemed remarkably similar to the old policy of benign neglect. Rangers, after all, apparently never killed elk in the valley, nor did they capture them for transplantation beyond Park boundaries. Despite superficial continuities of human-elk dynamics in the Kawuneeche, however, the imposition of the new elk-management policy on the east side of Rocky prompted far-reaching changes west of

⁹⁸ Quoted in Wagner et al., *Wildlife Policies in the U. S. National Parks*, 50.

the Continental Divide. Most notably, the Park's elk populations began to increase dramatically from the 1960s onward; the east side herds were estimated to number less than a thousand in the 1960s, but their numbers grew rapidly, reaching perhaps 3,000 head by 1982.⁹⁹ Because of the well-documented propensity of elk to migrate from winter ranges around Estes Park to the Kawuneeche, a larger elk herd on the winter range of the east side almost certainly made for larger elk populations on the spring and summer ranges that stretched from the Colorado River bottomlands up to the tundra straddling the Front Range and Never Summers. The growth of the park elk herd seems also to have led larger numbers of elk, probably driven by overpopulation and range deterioration on the east side, to winter in the Kawuneeche. A small anecdote from the superintendent's monthly report for January, 1964, offered tantalizing evidence that more elk were spending more time on the Park's west side: "About 18 elk are remaining in upper Kawuneeche Valley," the report claimed, "for the first time in approximately 45 years, according to Mr. John Holzwarth, long-time resident of the area" (Holzwarth had evidently forgotten that elk had wintered in the valley in the late 1930s).¹⁰⁰ By 1980, Park biologist David Stevens, citing 555 ground counts and 25 aerial counts comprising more than 1,800 observations over the course of twelve years, would claim that "up to 10%" of the Park's elk herd wintered in the Kawuneeche. "Some elk remain in the Colorado River valley in winter," Stevens pointed out. "The highest count was 52 in 1970, but tracks would indicate around 100 elk usually are in the area in early winter," with the elk "generally . . . distributed from Phantom Valley trailhead to Harbison Meadows." Stevens tracked Kawuneeche elk moving southward as winter descended on the valley, forcing the animals to seek food and shelter at lower elevations, "near Willow Creek Reservoir or Knight Ridge along the northeast side of Lake Granby." Stevens also noted

⁹⁹ Stevens' figure from Hess, *Rocky Times in Rocky Mountain*, 26.

¹⁰⁰ SMR, Jan., 1964.

that up to 30% of the Park's elk wintered on alpine tundra, primarily east of the divide, but with large concentrations along Trail Ridge between Milner Pass and Forest Canyon Pass.¹⁰¹

Several factors may have contributed to the growing numbers of elk Stevens found wintering in the Kawuneeche. Consider, first, the problem of human population growth adjacent to Rocky's boundaries. Assessments of the elk crisis in the 1950s and early '60s, like those of more recent decades, bemoaned the impact of population growth outside Park boundaries on the east side herd. "The basic reason" that hunting outside park boundaries and other "indirect control methods failed," one manager claimed, "lay in the fact that old herd migration routes were being blocked more each year by human habitation." As a result of rapid growth in and around Estes Park, more elk were crowding into the comparatively open and undeveloped lands of Rocky Mountain National Park, "with consequent range depletion, inside the Park becoming greater as a result of herd increases and animal reluctance to follow old migration routes to lower winter range."¹⁰² Grand Lake was growing much more slowly than Estes Park; even so, the thriving town, together with the flooding of Lake Granby, Shadow Mountain Reservoir, Willow Creek Reservoir, and other sites downstream from the Kawuneeche, rendered tens of thousands of acres of habitat and migration routes inaccessible to elk.

In the Kawuneeche itself, meanwhile, the Park's policy of land acquisition opened up new niches for elk on the former dude ranches and homesteads on which private landowners had previously kept horses and cattle. Park officials such as the rangers who turned water onto the

¹⁰¹ David R. Stevens, *The Deer and Elk of Rocky Mountain National Park: A Ten-Year Study*, NPS Service Report ROMO-N-13, 50-51, 62. The same report claimed that up to 30% of the herd actually wintered on "alpine tundra." Stevens map of winter range shows that most of these alpine areas lay east of the continental divide; the main exception lay in the Specimen Mountain area.

¹⁰² Supervisory park ranger for forestry, fire control and wildlife, memorandum to RMNP superintendent, Feb. 1, 1960. For a more recent articulation of this idea, see Larkins, "Patterns of Elk Movement and Distribution," 2, 7-8. On the phenomenon of reduced hunting pressure leading elk to move within RMNP's borders, see Peek, Pedersen, and Thomas, "Future of Elk and Elk Hunting," 605.

“elk meadow” on the old Harbison property likely thought that encouraging elk to feed on former livestock pasture would enhance both Rocky’s aesthetic appeal, and the Park’s ecological integrity. But the grasses that had supported hundreds of domesticated animals would also sustain large numbers of elk, with a crucial catch: each year, when the deep snows of the Kawuneeche buried these pastures, wild ungulates would turn not to the hay bales laid up by ranchers to feed their stock over the winter, but instead to the valley’s native browse, especially the willow branches that poked up above the Kawuneeche’s snows. Biologist Stevens’ noted that “since snowfall is deep” in the Kawuneeche, with a long-term mean of nearly three feet falling in March alone, “most feeding after the fall period is on the willow vegetation type.”¹⁰³

With more elk living in the valley, particularly during the winter, willows faced unprecedented pressures. By the early 1990s at the very latest, some Park officials began to raise concerns about the impact of elk herbivory on Rocky’s west-side ecosystems. Karl Hess, Jr. worriedly noted in his 1993 polemic, *Rocky Times in Rocky Mountain National Park*, that “park naturalists” had noticed “that elk have destroyed large willow stands in recent years.” Even more alarming was Hess’s assertion that because of elk overpopulation in the Kawuneeche, “Grossly simplified plant communities, composed of only a few grazing-resistant species, have replaced the biologically diverse and complex willow stands.”¹⁰⁴

Moose: From Interloper to Mainstay

By the time Hess and others drew attention to the plight of the Kawuneeche’s willow communities, a second and even larger herbivore had joined growing elk populations on Rocky’s west-side range. Colorado game managers had begun tossing around the idea of establishing

¹⁰³ Stevens, *Deer and Elk of Rocky Mountain National Park*, 50-51, 62

¹⁰⁴ Hess, *Rocky Times in Rocky Mountain National Park*, 36.

moose in populations by the 1940s at the latest.¹⁰⁵ But the campaign for moose gained steam with the publication of Richard Denney's 1967 article in *Colorado Outdoors*, "Moose for Colorado?" Denney, a one-time game biologist for the Colorado Division of Wildlife (where he participated with RMNP biologists on the cooperative elk studies of the early 1960s) who had subsequently taken a job with the United Nations' Food and Agriculture Organization in Kenya, sought to drum up support for transplanting Shiras or Wyoming moose (*Alces alces shirasi*) into Colorado.

Denney built his case carefully. He began his article by raising a host of thorny questions: "How long has it been since moose have been in Colorado in any numbers, if ever? How much suitable moose habitat do we have in Colorado? How would moose fit in the general ecological scheme if they were released in Colorado? How much potential damage do they represent, and how can they be controlled? These questions would all have to be answered satisfactorily," Denney believed, "before we can begin to answer the title question."¹⁰⁶ Denney claimed in "Moose for Colorado?" that before the state could undertake the difficult and costly work of transplanting the creatures, scientists, policy-makers, and managers needed to think long and hard about the possible consequences of their actions—not only for moose, but also for people and other elements of the state's ecosystems. Unfortunately for the Kawuneeche Valley's willow communities, a campaign that began with circumspection quickly assumed its own momentum, with most of the questions Denney rightly asked remaining essentially unanswered.

¹⁰⁵ A 1949 study mentioned "the proposed stocking of moose." Gilbert N. Hunter and Lee E. Yeager, "Big Game Management in Colorado," *The Journal of Wildlife Management*, 13 (Oct., 1949), 409.

¹⁰⁶ Richard N. Denney, "Moose for Colorado?," *Colorado Outdoors* (March-April, 1967), 16.

The DOW eventually determined that North Park, Rocky's near neighbor to the northwest, offered "the most suitable range" for introducing moose.¹⁰⁷ By the close of the 1980s, though, the west side of RMNP would become Colorado's moose habitat *par excellence*. Ever since, hopes of sighting a few of these huge, gawky ungulates have lured growing numbers of tourists and travelers to the Kawuneeche. How did moose improbably become a keystone species in the Kawuneeche, what impacts would these enormous herbivores have on the valley's ecosystems, and what can the story of moose introduction reveal about the valley's willow problems?

Denney and subsequent researchers agreed that breeding populations of moose had probably never inhabited Colorado. Moose live solitary lives, and lone wanderers moving south from Wyoming or east from Utah sufficed to account for all known reports of moose sightings and substantiated kills (chiefly made by elk hunters) in Colorado between the 1860s and 1960s.¹⁰⁸ Transplanting moose from Wyoming or Utah to Colorado thus represented not ecological restoration, but instead an unprecedented ecological innovation driven largely by the realization of state game officials that big animals could pay big dividends for Colorado sportsmen and the state's tourist industry.

Opponents of game introductions, meanwhile, raised both economic and ecological objections. Denney explained that "The biggest obstacle [to moose introduction] is the fact that the U. S. Forest Service is against any such introduction in Colorado on the grounds that there are already too many mouths eating the available forage."¹⁰⁹ Ranchers, for their part,

¹⁰⁷ Barrows and Holmes, *Colorado's Wildlife Story*, 158.

¹⁰⁸ See note below and David M. Armstrong, *Rocky Mountain Mammals: A Handbook of Mammals of Rocky Mountain National Park and Vicinity* 3rd ed. (Boulder: University Press of Colorado, 2008), 217-18..

¹⁰⁹ Denney, "Moose for Colorado?," 19.

complained of the damage moose seemed likely to inflict on fences, haystacks, and forage.¹¹⁰ And even state wildlife officials seemed to have lost their zeal for the project.¹¹¹

Landowners and foresters generally opposed the state's plans to transplant moose to Colorado, but NPS officials initially considered a state proposal to introduce the animals to Rocky Mountain National Park in the early 1970s. Under the reigning doctrine of natural regulation precipitated by the system-wide crisis over large ungulate populations, though, Park Service support for the plan came to hinge on the vital question of nativity: Were moose indigenous inhabitants of RMNP, or occasional interlopers? The answer would determine whether the state could transplant moose directly into Rocky. Park officials, after sifting through historical accounts and consulting University of Colorado biologist, David M. Armstrong, a prominent mammalogist and author of the painstakingly researched *Distribution of Mammals in Colorado* (1972), decided in 1974 that they had no choice but to “drop the moose reintroduction proposal” and cancel “preparation of the environmental assessment on the reintroduction, since it appears that data is lacking to justify the proposal.”¹¹² RMNP Superintendent Roger J. Contor clarified in a 1974 memo to the regional director that Park officials had “determined that a breeding population never existed within the park.”¹¹³ Chastened by several decades of trouble

¹¹⁰ See, for instance, Fred Brown, “Opposition to Moose Diminishes,” *Denver Post* Jan. 21, 1978, 2.

¹¹¹ Robert L. Hoover, a Wildlife Water Resource Specialist for the Colorado Division of Game, Fish, and Parks told a correspondent in 1970 that “Although we have considered transplanting moose ... to Colorado, no transplant has been made at this writing, nor is any anticipated in the immediate future.” Hoover to Joe Van Wormer, March 18, 1970, copy appended to Denney, “Moose for Colorado?,” in File: “Shiras moose-reintroduction,” Natural Resources Box LL, Wildlife Management/Monitoring Research Records, RMNP Archives.

¹¹² Roger Contor to regional director, Nov. 13, 1974; David Michael Armstrong, *Distribution of the Mammals of Colorado* (Lawrence: University of Kansas Printing Service, 1972). See also A. Bailey, “Records of Moose in Colorado,” *Journal of Mammalogy* 25 (1944), 192-93.

¹¹³ Roger J. Contor, memorandum to regional director, Rocky Mountain Region, “Environmental Assessment, Moose Reintroduction, Rocky Mountain National Park,” Nov. 13, 1974, File: “Shiras Moose—Reintroduction,” Natural Resources Box LL, “Wildlife Management Monitoring Research,” RMNP Archives.

with elk, trout, and other species relocated to the Park with little consideration for long-term ecological impacts, Service officials could hardly justify undertaking another risky experiment within Rocky's boundaries.

Colorado Department of Wildlife managers, however, continued to push ahead. Denney, as a retrospective 1980 article in the *Rocky Mountain News* put it, "took the issue by the antlers. He launched a study of the idea, which led to a request for money from the General Assembly." The legislature ended up funding the preparation of a "Proposal for the Reintroduction of Moose into Colorado," which the DOW completed in 1976.¹¹⁴ The proposal prompted "vigorous debate in the Statehouse."¹¹⁵ Conservative lawmakers, opposing both the provision of public funds to conservation programs, and a perceived failure of the DOW to obtain support for their reintroduction plan from farmers and ranchers, sought to cripple the Division's efforts to bring moose back to Colorado in the 1977 session of the state legislature by voting down "an appropriation for temporary moose holding facilities." The next year, though, what one state senator aptly called a "mellowing" began. DOW officials mooted one conservative objection by agreeing to fund the moose introduction program using private donations instead of state moneys. The right wing's second concern, opposition from private land-owners, evaporated after State Wildlife Commissioner Tom Farley of Pueblo presented "figures from a survey taken by county officials [from Jackson County, comprising all of North Park, the area the DOW had singled out for reintroduction] which showed 64 percent of the landowners in the sparsely populated area" expressing their approval of the proposal "of bringing in moose, while only 28

¹¹⁴ Colorado Division of Wildlife, *A Proposal for the Reintroduction of Moose into Colorado* (Denver: Colorado Division of Wildlife, 1976).

¹¹⁵ Gary Gerhardt, "Wilhelmina: A Face Only Mother or Ranger Loves," *Rocky Mountain News*, April 13, 1980, 4.

percent were strongly opposed.”¹¹⁶ The state’s arguments that introducing moose would help “control the encroachment of willows into irrigated hayfields” probably helped to explain the landowners’ approval of the DOW proposal.¹¹⁷

As the DOW’s moose boosters “circumvented the debate” at the state legislature, they also moved to secure Park Service support for the plan. Asked to comment on the state’s moose proposal, Park officials “responded favorably,” RMNP biologist David R. Stevens later recalled. Stevens and his colleagues unquestioningly accepted the DOW’s tortured argument “that the moose was expanding its range southward at the time of the arrival of European man,” the corollary to which held that “if the early settlers had not interfered with this movement ... the moose would have become established on its own in the state.”¹¹⁸ Not a shred of evidence supported the scenario joined state wildlife officials in portraying. No data supported the theory that advancing moose populations had been repulsed just short of Colorado’s borders by an advancing horde of white settlers. Yet when the actual environmental history of Rocky failed to serve their purposes, Park officials apparently felt no qualms about joining the DOW in trying to reset the course of history to a past that never happened. When moose subsequently ventured into Rocky Mountain, Stevens concluded that this migration represented “simply . . . a form of natural pioneering by an animal very prone to expanding its range when favorable habitat is available.”¹¹⁹ The NPS approved of a state plan that made no pretense of stopping such “natural

¹¹⁶ Brown, “Opposition to Moose Diminishes.”

¹¹⁷ Armstrong, *Rocky Mountain Mammals*, 218.

¹¹⁸ David R. Stevens, “Moose in Rocky Mountain National Park,” 1988, typescript in folder: “Shiras moose-reintroduction,” Natural Resources Box LL—Wildlife Management/Monitoring Research, RMNP Archives, pp. 1-2. Moose, according to a recent in-house history of the DOW, “appeared to be moving slowly southward; in 1978 the Division speeded up the process.” Barrows and Holmes, *Colorado’s Wildlife Story*, p. ?

¹¹⁹ Stevens, “Moose in Rocky Mountain National Park,” 2. Stevens and other moose advocates within RMNP’s staff pointed out that there were no records of moose in Jackson Hole “during the

pioneering,” reasoning that the reintroduction site lay “13 km west of the National Park boundary,” and hence well beyond the Service’s jurisdiction or responsibility. NPS officials thus avoided the expense and hassle of preparing environmental impact statements or taking public comment on the introduction of moose to Rocky.¹²⁰ Instead, they could simply bide their time while the state, the Forest Service, and the moose did the rest.

In early 1978, the DOW had finally lined up the support it needed to implement its moose proposal. That March, the agency imported twelve moose (“three males, seven females, a yearling male, and a female calf”) that had been shot with tranquilizers from a helicopter hovering above Utah’s Uinta Mountains, then hauled in “a truck equipped with wooden crates” to “the willow-choked Illinois River drainage.” The drop site lay along North Park’s southeastern fringe, in a spot separated from the Kawuneeche Valley only by Bowen and Baker Passes, gentle and relatively low divides covered with plenty of grass and browse.¹²¹ In January, 1979, twelve more moose—“one male, six females, three yearling females, and two female calves”—were captured on a private ranch located on an inholding within Grand Teton National Park, trucked to Colorado, and released near the same spot.¹²² Wildlife researchers fitted each of the transplanted animals with a radio collar. By April of 1980, cows in Colorado’s first known moose herd had given birth to 18 calves.

A *Rocky Mountain News* reporter gushed that because of the DOW’s successful introduction and reproduction of moose, “an unpretentious stretch of [road through North Park] is no longer just another stretch of highway, ... it’s something special.”¹²³ Indeed, moose, the

trapping and fur trade era.” Yet by 1988 Northwestern Wyoming “ha[d] a thriving population which was between 700 and 800 in 1967” [1-2].

¹²⁰ The first part of the sentence quotes *ibid.*, 2; the last clause is my interpretation.

¹²¹ *Ibid.*, 3.

¹²² *Ibid.*, 3.

¹²³ Gerhardt, “Wilhelmina,” 62.

largest species of deer in the world and the second-largest land mammal in North America after bison, prompted not only bemusement with the creatures odd looks and bumbling behavior, but also wonder at the power and majesty of wild nature and pride at the ability of scientifically-minded game managers to improve upon the primeval. For all their symbolic power, of course, moose were also targets of less savory human desires. Poachers brought down 19 of the creatures between 1978 and 1983, but the remaining animals faced no non-human predation, thanks to the extirpation of wolves and grizzlies in the late nineteenth and early twentieth centuries. Moving into relatively open ecological niches, moose continued to reproduce very rapidly. Cows virtually always give birth to a single calf, but in an indication of what one reporter termed their “penchant for Colorado,” seven mating pairs produced sets of twins in the first five years of the reintroduction program alone. Colorado’s total moose population reached 85 in 1983, and 100 to 130 in 1986-87.¹²⁴ By 2005, more than 60 moose were estimated to be summering within Rocky Mountain National Park alone.¹²⁵

¹²⁴ Karen Hinton, “Moose Herd in Colorado Grows to 85,” *Rocky Mountain News* Sept. 6, 1983, 16; “North Park Moose Herd Booming,” *Wildlife News* 12 (May-June, 1987), 4. The latter document places the moose population as 100 in 1987, but Stevens places it at 130 in 1986. Stevens, “Moose in Rocky Mountain National Park,” 9.

¹²⁵ J.D. Dungan and R. G. Wright, “Summer Diet Composition of Moose in Rocky Mountain National Park, Colorado,” *Alces* 41(2005), 139.



A bull moose chomping on aquatic plants in the Kawuneeche Valley as Mt. Baker towers above, July 1993. Animals such as this fed heavily on the willow thickets along the Colorado River bottomlands, contributing to the decline of willow and beaver in the valley. Kathleen Horst Rutter photograph, July 1993, catalog #6-7-E-19, RMNP Photo Collection.

As moose numbers increased, the animals decamped from the site where the DOW had originally released them. At least one embarked on a long migration back to Wyoming; several others, seeking refuge from the “flies and heat, which plague lower elevations in summer,” headed through the high country of the Never Summer Range and over alpine passes leading into the Kawuneeche Valley.¹²⁶ The Park’s first moose sighting occurred in June, 1980, near Onahu Creek; seven more observations were made that year, “mostly in the Harbison meadow area,

¹²⁶ Hinton, “Moose Herd in Colorado,” 16.

Onahu Creek and Lulu City”—all of which comprised riparian areas with ample willow thickets. Park biologist Stevens reported: “The moose appeared to move back toward the release site for the breeding season in the fall, and did not return to the park that winter.” Moose dispersal slowed in 1982 and 1983, then picked up again in 1984, before the “first documented overwintering of moose in the park” in the winter of 1985-’86. Though some moose began to cross the Continental Divide during the early and mid-1980s, sightings remained particularly common in the riparian areas of the park’s west side. The observation of “four cows with five calves in 1987” suggested to Stevens that moose had begun to breed within the Park.¹²⁷ The “natural pioneers” had become wildlife settlers. Whether the Kawuneeche’s willow could support these hefty creatures, though, remained to be seen.

The establishment of a resident moose population in the Kawuneeche initially attracted little concern, as Park biologist Stevens’ rationalization of their introduction to Rocky indicated. By the early 1990s, however, new population estimates seemed to indicate that moose populations were growing much more rapidly than the DOW had projected. State game managers sought to control moose by issuing additional hunting licenses, as well as transplanting North Park moose to start a new herd in the San Juan Mountains outside of Creede, Colorado.¹²⁸ Ecologists, for their part, also began to study these large browsers’ impact on riparian ecosystems. Research by R. C. Kufeld and others, for instance, began to reveal that “several species of willow [we]re being heavily browsed by moose in North Park, raising questions on the

¹²⁷ Stevens, “Moose in Rocky Mountain National Park,” 6-15.

¹²⁸ The first season bull moose permits were offered, some 500 people applied for just 5 licenses. Barrows and Holmes, *Colorado’s Wildlife Story*, 265-266. DOW wildlife managers thought the herd numbered 300, when 500-600 probably turned out to be a more accurate figure. The state consequently increased the number of moose hunting licenses it issued to 60; Gary Gerhardt, “State Wildlife Division Aims to Cull Moose in North Park,” *Rocky Mountain News* April 16, 1992, 10. Gerhardt also reported that CDOW “intend[ed] to trap another 60 North Park moose” for relocation to Creede.

long-term impacts on riparian communities.”¹²⁹ Meanwhile, dynamics within the Kawuneeche were also prompting heightened concern. In particular, by the early 2000s, moose were expanding their range still further, pushing from their initial haunts in the Kawuneeche’s larger, lower-lying meadows into higher-elevation riparian willow communities.¹³⁰ Since higher-elevation meadows were smaller, less productive, and often more fragile than the larger expanses of willow along the Colorado River bottomlands, growing numbers of moose in the high country seemed sure to result in rising stresses on the valley’s subalpine meadow ecosystems.¹³¹

Introduced moose those aggravated the pressures reintroduced elk had begun to exert on the Kawuneeche Valley’s willow populations. A 1999 scientific study argued that elk herbivory served “to suppress heights, leader lengths, and annual production of willow, and herbaceous productivity of willow sites within the park.”¹³² Meanwhile, a detailed analysis of moose feeding habits within RMNP published in 2005 found that “six willow species comprised 91.3% of moose summer diets” in the Colorado River watershed.¹³³ Together, elk and moose were subjecting the Kawuneeche Valley’s willows to year-round browsing, undoubtedly contributing to the decline in willow health that scientists have observed since the 1990s. One 2005 master’s thesis hypothesized that “intense herbivory” upon willows by elk and moose might reduce the

¹²⁹ R. C. Kufeld, “Status and Management of Moose in Colorado,” *Alces* 30 (1994), 41-44; R. C. Kufeld and D. C. Bowden, “Movements and Habitat Selection of Shiras Moose (*Alces Alces Shirasi*) in Colorado,” *Alces* 32 (1996), 85-99.

¹³⁰ J.D. Dungan and R. G. Wright, “Summer Diet Composition of Moose in Rocky Mountain National Park, Colorado,” *Alces* 41(2005), 139-146.

¹³¹ Bradley P. Stumpf found that “willows commonly grow over 3m (but can grow over 5m)” below 3000m in elevation, but above that elevation, willows larger than 1m in height “are uncommon.” “The Summer Forage Quality of Willow Communities and Its Influence on Moose Foraging Ecology in Rocky Mountain National Park, Colorado” (master’s thesis, University of Idaho, 2005), 32.

¹³² Findings of L.C. Zeigenfuss, F. J. Singer, and D. Bowden, *Vegetation Responses to Natural Regulation of Elk in Rocky Mountain National Park*, Biological Science Report USGS/BRD-1999-003 (Denver: Government Printing Office, 1999), as summarized in Dungan and Wright, “Summer Diet Composition of Moose in Rocky Mountain National Park, Colorado,” 139.

¹³³ *Ibid.*, 142. Fecal analysis showed that moose “consume 79.3% willow,” raising interesting questions regarding the disparity between observed intake and fecal output. *Ibid.*, 143. In winter, moose tended to browse more heavily on conifer needles, grasses, sedges, and forbs. *Ibid.*, 144.

diversity of willow species toward the upper altitudinal limits of their ranges, with plane-leaf willow (*Salix planifolia*) enjoying a competitive advantage over other willow species because it “may be better able to compensate for herbivory-related losses than competing species.”¹³⁴ This ecologist, though, joined most of his colleagues in warning that the potential destruction of willow communities by elk and moose promised to have more “widespread effects,” including soil erosion, the destruction of trout habitat, and, not least, the decline of beaver populations.¹³⁵

Beavers: Abundance, Scarcity, and Peril

The combined impacts of moose and elk in the Kawuneeche served to squeeze beavers out of the valley. There is little mention of beaver in Park records on the Kawuneeche between 1963 and the late 1990s, suggesting that the “beaver trouble” that had prevailed since homesteading began had finally abated. The acquisition of most private landholdings in the valley by the NPS presumably saved rangers the trouble of responding to angry letters and phone calls from homesteaders, dude-ranch operators, and second-home owners. Beaver populations, though, were not simply growing less problematic, but also smaller. The timing and causes of this decline in the Colorado River watershed remain obscure. By the 1990s, though, it became clear that the problem of overabundance that had bedeviled settlers since the late 1800s had morphed into a new and even more troublesome kind of beaver problem—a problem of scarcity.

Beginning in 1999, a team of ecologists and hydrologists led by Bruce Baker began a series of RMNP-funded studies of beaver decline. One of the first essays published by Baker and his colleagues team bore an admirably direct and inquisitive title: “Why Aren’t There More Beaver in Rocky Mountain National Park?” The answer to this problem, the authors suggested

¹³⁴ Stumpf, “Summer Forage Quality of Willow Communities,” 29-30.

¹³⁵ *Ibid.*, 1; on soil erosion fears in North Park, see “State Wildlife Division Aims to Cull Moose in North Park.”

in the essay's opening lines, bluntly related the outline of the historical narrative that informed the biologists' understanding of beaver dynamics at Rocky: "Beaver populations have declined dramatically in Rocky Mountain National Park since 1940. Declines were initiated by trapping in 1941-1949."¹³⁶ The team's findings indeed squared with evidence from Rocky's east side. Yet this scenario contradicted two sets of apparent facts regarding the history of beavers in the Kawuneeche. Few good statistics existed to document beaver populations in the valley at any point prior to the 1990s, but there is no sign of beaver populations having started to decline as early as 1940. Moreover, trapping on the west side began well before 1940, and continued at least into the early 1960s. Finally, because the research team focused its efforts on east-side locations lying within Rocky Mountain's original boundaries, it employed a simplistic understanding of the roles that livestock played in shaping relationships between beaver, elk, and willow.

Had the researchers paid more attention to the Colorado River Valley, they would have known that the environmental history of the Kawuneeche belied their claim that: "Although beaver reintroduction helped recover populations throughout much of their former range, beaver-willow communities have declined or failed to recover in riparian environments that have become heavily browsed by livestock or ungulates since European settlement." The biologists proposed that "these additional herbivores" offered a "new level of competition" that was "unnatural to beaver-willow mutualisms, which likely evolved under relatively low herbivory in a more predator-rich environment."¹³⁷ In the Kawuneeche, though, some 600 beavers had populated the valley's streams in 1940, when livestock populations in the Kawuneeche may well

¹³⁶ Baker et al., "Why Aren't There More Beaver in Rocky Mountain National Park?"

¹³⁷ Bruce W. Baker, Heather C. Ducharme, David S. Mitchell, Thomas R. Stanley, and H. Raul Peinetti, "Interaction of Beaver and Elk Herbivory Reduces Standing Crop of Willow," *Ecological Applications* 15(2005).

have reached or neared an all-time high. The ecological assumptions Baker and his team derived from their experience on the Park's east side failed to account in any way for the fact that beavers had fared quite well on the west side throughout a regime of intensified grazing by domesticated livestock, only to collapse as wild ungulates, particularly elk and deer, took over the range formerly stocked with horses and cattle.¹³⁸

Such shortcomings notwithstanding, Baker and his colleagues echoed a hypothesis about beaver decline first formulated by Fred Packard during his RMNP mammal investigations of 1939-'40. Packard began with an important observation. Beavers typically preferred aspen "for food and building material." Yet "wherever willow grows abundantly near streams, the beavers accept that plant as a satisfactory substitute for aspen." Packard noted that RMNP was "unusual in the number of its colonies that have been developed around a dependence upon willow, few of them being primarily dependent upon aspen, as is often the case elsewhere." The beaver's flexibility helped to secure it a place in Rocky Mountain, which generally lacked large aspen stands. At the same time, though, the trees favored by the Park's beavers were experiencing considerable stress because of browsing by Rocky's prodigious ungulate populations: "A serious problem," Packard observed, "especially on streams in the vicinity of Estes Park, is the competitive effect of deer and elk on their winter range upon the supply of aspen and willow. ... Together these animals produce a noticeable decrease in the beavers' food supply, which is especially conspicuous in Moraine Park."¹³⁹ Less than a decade after *Fauna No. 1* used Rocky's

¹³⁸ As Jack R. Nelson wrote in 1982, "Biologists have spent considerable time and effort over the past half century gathering data concerning interspecific competition among large herbivores," but the big questions "remain largely unanswered." Jack R. Nelson, "Relationships of Elk and Other Large Herbivores," in Thomas and Toweill, comps. and eds., *Elk of North America*, 415-416. See also *ibid.*, 418-423, on elk and cattle as "socially compatible" and mutually tolerant of each other. While elk ate more brose than grass, and cattle ate more grasses than forbs, the species nonetheless competed for willow and other food sources.

¹³⁹ Packard, "Survey of the Beaver Population of Rocky Mountain National Park," 227.

industrious beaver populations as an object lesson in managing park resources according to ecological principles, Fred Packard proposed that resurgent elk populations in the Park were starving beaver out of some of their favored habitats.

Fifty years after the publication of Packard's report, the team of scientists studying the decline of beaver in the Park extended and deepened Packard's explanation. Baker and his colleagues singled out elk, whose population had skyrocketed in the Kawuneeche since the 1940s, as a prime cause of beaver depopulation (the Park's deer populations declined over the twentieth century, for reasons that are not well understood).¹⁴⁰ The researchers had noticed a robust pattern early in course of their research: "Most active beaver populations were located where ungulate use of riparian shrubs was least, and ... beaver were largely absent from areas with heavy use by ungulates, especially elk." A fence "erected to protect willow from elk browsing" in Moraine Park (called an exclosure) provided support for the hypothesis. In the absence of ungulates, "the elk exclosure," Baker and colleagues claimed, "had become a beaver food plot. Willow plants protected from elk browsing had grown tall and vigorous, whereas most outside plants were short and hedged due to 30 years of intense use by elk." Through their exclosure study, as well as other observations and experiments, the scientists gained a better understanding of the dynamic interrelationships between elk, beaver, and willow.¹⁴¹

The results, published in a series of scholarly papers, argued that mutualism ordinarily prevailed between beaver and willow. But when elk (and presumably moose, too, though the researchers' focus on the east side of the Park precluded any mention of the introduced herbivores) entered the equation, these mutualistic interactions broke down. Because "beaver cut tall willow, and elk browsing strongly suppressed willow regrowth, then the interaction of beaver

¹⁴⁰ Hess anticipated this interpretation in 1993. *Rocky Times in Rocky Mountain National Park*, 43-48

¹⁴¹ Baker et al., "Why Aren't There More Beaver in Rocky Mountain National Park?"

cutting and elk browsing could alter the structure and function of the willow community. . . . When elk browse beaver-cut willow,” the authors explain, “they can drive a tall willow community into an alternative state consisting of short, hedged plants that lack sexual reproduction and will eventually die of old age. If elk browsing decreases the suitability of willow as beaver food by reducing the biomass of twigs and bark on stems and their preference by beaver, then beaver populations will decline where willow limits populations.” In such places, “willow that provides adequate biomass of twigs and bark is *necessary* for beaver as a winter food supply, but short or heavily-browsed willow (or no willow) is *sufficient* for elk, as they can subsist on herbaceous forage in areas lacking deep winter snow. Thus,” the authors concluded, “in riparian systems where elk are overabundant they will outcompete and exclude beaver.”¹⁴² The Park’s elk problem, in other words, explained its beaver problem, too, with the two species’ shared hunger for willow serving as the key link between them.

The authors of “Why Aren’t There More Beaver in Rocky Mountain National Park?” concluded with a grim scenario that seemed a fitting coda to Enos Mills’ meditations: “When beaver populations decline, then wetlands will lose key willow establishment and survival processes and beaver-engineered wetlands will collapse,” a doomsday scenario that exposed the most serious failings of the NPS policy of natural regulation. Letting nature take its course in landscapes as intensely modified as those in the greater RMNP region is impossible; a fool’s errand, it supplanted the informed fallibility of scientific management with an unstable and potentially cataclysmic situation in which burgeoning herds of elk and moose are destroying not simply aspens and willows, but also the hydrologic systems responsible for sustaining some of the Park’s richest ecological communities.

¹⁴² Ibid.

Conclusion: The Vital Nexus

By the mid-1990s, the elk story entered a new cycle. Many tourists and locals in the Estes Park and Grand Lake areas continued to view elk as desirable visual attractions and embodiments of western nature. And yet the downsides of elk population were growing increasingly difficult to overlook.

In Estes, elk appeared to be everywhere: chomping on irrigated, fertilized golf courses, wandering through fences, ambling down streets. Inside Park boundaries, meanwhile, the range problems which had first been noted back around 1930, and which seemed from most accounts to be improving by the time Superintendent Hanks abandoned lethal control back in 1962, were again reaching crisis proportions. The most alarming news of all, as we have seen, concerned the impact of elk and moose herbivory on willows and the beaver that depended upon them.

Beaver and elk both eat willow. But elk, unlike beaver, can meet their dietary needs by shifting to other food sources if needed. Willow, for their part, require high water tables to thrive, as well as recently deposited, wet soils if they are to regenerate. Healthy beaver populations proved uniquely capable of creating the conditions for willows to thrive. Beaver and willow, in other words, often engaged in symbiotic relationships. Beavers ate willow and used it in their industrious efforts to alter the landscape and provide habitat for plant species they found toothsome, such as aquatic grasses; the resulting hydrological changes fostered further willow growth.

No inherent ecological dynamic dictated that elk would inevitably place this carefully orchestrated mutualism at risk in the Kawuneeche by the dawn of the new millennium. Elk, after all, had inhabited the Rocky Mountains alongside beaver and willow for many thousands of years without any known negative effects on the rodents; as beaver and elk migrated back into

the Kawuneeche after their extirpation in the nineteenth century, moreover, the animals re-established relationships that evidently allowed both animals and willows to flourish in relatively close quarters for many decades. Instead of destiny, then, the apparently unhealthy and unsustainable dynamics between elk, beaver, and willow in the Kawuneeche that began to concern so many scientists and park managers in the late 1990s reflected the contingent ways in which a wide array of human activities transformed ecological relationships throughout the region.



Radio-collared cow elk browsing at the Timber Creek Campground, July 2010. This image suggests both the ways in which elk became habituated to humans under the “natural regulation” paradigm, and the ongoing efforts to monitor and manage wildlife populations. Daniel Knowles photograph, July 2010.

In general terms, the NPS response to the elk problem of the 1990s involved an interlocking series of efforts: to understand ecosystem dynamics in the past and present; to

model the multiple possible ways in which these dynamics might unfold in the future under a range of potential management scenarios; and to facilitate an elaborate set of processes through which the NPS could collaborate with other agencies and stakeholders to decide upon and implement the course of action most likely to achieve the outcome judged most desirable and practicable under applicable federal laws and guidelines. As the most important benchmark in this ongoing process, the Elk and Vegetation Management Plan of 2007 (EVMP) offers a fitting place to conclude this examination of elk, moose, beaver, and willow in the Kawuneeche.

The EVMP, though ostensibly applicable to all the elk in the park, actually applied most directly only to the so-called “park herd” that wintered east of the Continental Divide. “The analysis,” states the first page of the executive summary, “includes the elk population that primarily winters in the eastern part of the park and in the Estes Valley and primarily summers in the Kawuneeche Valley and alpine areas of the park and the vegetation resources on the elk’s primary winter and summer ranges inside the park.”¹⁴³ Elk who wintered along the Divide, in the Kawuneeche, or outside Park boundaries in Grand County thus remained largely unnoticed in the Park’s planning process. No one really knows what impact, if any, this limited conception of elk in RMNP will have along the Colorado River headwaters.

The EVMP proceeded to indict the impact of large elk populations on Park vegetation. “Elk browsing,” claims the report, “currently stunts the growth or kills all young aspen trees (i.e., less than 8 feet in height, also called suckers or shoots) on the core elk winter range and in some parts of the Kawuneeche Valley. Accordingly, aspen regeneration is suppressed, resulting in overmature, deteriorating aspen stands with no small or mid-size trees. These stands will likely be permanently lost,” the EVMP ominously forecast, “if the current level of elk herbivory

¹⁴³ EVMP, Executive Summary, iii.

continues, although it is difficult to predict when this would happen.”¹⁴⁴ Another worrisome passage of the report noted that “Elk are severely inhibiting the ability of montane riparian willow to reproduce, as few willow plants on the primary winter range produce seed, and seedling survival is almost non-existent. Elk are also suppressing the growth of willow plants, so that few plants can attain a height greater than the herbaceous layer, which is the layer of non-woody plants such as grasses, forbs, and herbs.” Rising elk populations had “contributed to a transition of tall willow areas to short willow areas over the last 60 years in Moraine Park and Horseshoe Park.” Elk had further compromised willow health, the EVMP charged, by reducing beaver populations within the park.

This, together with other factors such as the ongoing diversion of Colorado River water into the Grand Ditch, resulted in lower water tables. Since “willow is the dominant woody shrub on almost all wet meadow or riparian areas in Rocky Mountain National Park,” the impact of elk herbivory on willows thus had the secondary effect of compromising “wildlife habitat for a large number of bird, butterfly, and plant species.”¹⁴⁵ If people did not manage the elk, in other words, the elk would continue to “manage” Park ecosystems in a manner that would eventually undermine the viability of those ecosystems.

Research conducted since the EVMP has added another wrinkle to understandings of willow die-off in the Kawuneeche. Ecologist David Cooper explains:

Well, it’s interesting how in science you have certain preconceived ideas about what’s going on. ... [N]ow I think herbivory’s just one of the players in what’s going on over there. And what we have found out is that there are sapsuckers that

¹⁴⁴ Ibid., vi.

¹⁴⁵ Executive Summary, vi-vii.

use willows and aspen. They make these interesting geometric patterns on the bark, and they actually chip the bark away in these patterns of rows, of little squares where they chip the bark away. And they lick up the sap. They eat the sap, it's food and they eat whatever gets stuck on there, insects and other things, and we started noticing two years ago that every place there was a sapsucker, these sapsucker marks or wells, they're called, the stems above them were dead. And we started then looking around and clearly every place that the sapsuckers had utilized the willows, the willow above there was dead. And what happens is that these are happening at about knee high to waist high on the willows, and sapsuckers hit all these willows. There's lots of sapsuckers, they feed on hundreds and hundreds of willows at a time, and once the sapsuckers make these openings in the willow bark, what we found, have found out, out is that fungi get into those and the fungi are killing the stems. So it's actually a disease Once that stem dies, the willow will produce new shoots from below the point of death 'cause they can produce new shoots from the same stem. But now that those shoots are very short, the elk can browse them off and so there's no replenishment of tall stems of these willows that's occurring in the Kawuneeche Valley.¹⁴⁶

As Cooper and his colleagues discovered, the troubles willow face in the Kawuneeche involve an intricate set of interactions between an almost dizzying range of factors: sapsuckers, which are endemic to the valley; fungi, which hop rides from willow to willow on the bodies of those sapsuckers, then kill the stems above the wells that sapsuckers drill with their beaks; willow

¹⁴⁶ David Cooper interview with author, Oct. 1, 2010, transcript in rear of this report and on file at RMNP Archives.

thickets stressed by drought and water diversion; the decision by state wildlife officials (with USFS cooperation) to introduce moose despite compelling evidence that the animals were never native to Colorado; the reintroduction of elk to their old stomping grounds in the Colorado River Valley; a century of shifting and inconsistent policy by the NPS and other agencies toward elk populations; and the various social, cultural, and political factors that have shaped those twists and turns in management. Last but not least, there is the unsettling but profound kernel of wisdom Cooper related: in science, as in history, policy, and everything else, those “certain preconceived ideas about what’s going on” might actually pose the greatest obstacles of all.

Conclusion

Joining the insights of history to those of the environmental sciences to understand better even a place as small as the Kawuneeche Valley is challenging enough in its own right. More difficult still, but of equal or even greater importance, is the task of placing the environmental history of the Colorado River headwaters in larger contexts. This task largely lay beyond the scope of this report, though many comparative cases have implicitly informed the preceding analysis; at the same time, however, it is important to recognize in conclusion that the findings presented here offer a starting point, and that robust comparisons between the Kawuneeche and other places stand to enhance considerably our understanding of human-environment dynamics on the west side of Rocky Mountain National Park.

Other high-mountain valleys in north-central Colorado undoubtedly offer the most obvious candidate for comparative study. How, for instance, have relationships between ungulates, beavers, and willows differed in comparable valleys under United States Forest Service administration? How have wildfires and *Dendroctonus* infestations unfolded in the montane forests of Middle Park itself—and what salient differences have distinguished forest dynamics in the Kawuneeche from those where logging has been more frequent and widespread? How have the environmental impacts of tourism in Rocky Mountain National Park’s western stretches differed from those experienced in those portions of Grand County, Summit County, Eagle County, and Routt County where ski resorts currently dominate—places in which development effectively came to dominate the landscape during the same decades during which the Park Service was endeavoring to restore natural conditions in the Kawuneeche?

Other national parks in the Rocky Mountain chain in the U.S. and Canada offer further grist for the comparative mill. Have elk-willow dynamics pursued roughly similar trajectories in the Kawuneeche as in Yellowstone or Jackson Hole—and why or why not? Though mountain pine beetles have affected Glacier National Park, as well as several Canadian parks, are the prospects for forest regeneration (probably accompanied by greater heterogeneity) as positive as in RMNP, and for what reasons? Did the comparatively early removal of native peoples from the Kawuneeche result in different ecological dynamics unfolding there compared to the many other western national parks that Indian peoples continued to use and inhabit well after the U.S. Army had forced the northern Utes onto the Uintah and Ouray Reservation? Exploring such queries promises to shed further light on broader processes of environmental-historical change, while helping researchers identify with greater confidence the intricate workings of causation, interconnection, and other critical dynamics.

Last but hardly least, many of the factors that have inflected, shaped, and driven interactions between people and other parts of nature in the Kawuneeche Valley have affected places well beyond the Rockies. Natural and anthropogenic climate change, the rise of modern states, the introduction of exotic species, and state conservation, to name just a few of the more obvious candidates, have affected landscapes across the planet. Reconsidering the environmental history of the Kawuneeche alongside those of other places, whether in Slovakia or Argentina, India or New Zealand, can help us better comprehend both the common and unique features of the stories that have unfolded along the Colorado River headwaters.

Whether scholars pursue these comparative possibilities or not, the present study offers many opportunities for augmenting the interpretations of environmental history that visitors encounter during their time in the Kawuneeche Valley. The most pressing need is perhaps the

simplest: Presently, most placards and written materials in and about the valley cleave history and the environment into separate and disconnected stories. This approach, in which discussions of human history generally exclude ecology, and interpretations of ecology generally unfold in a kind of transhistorical present, does visitors a great disservice. It offers them only sporadic and incomplete clues regarding how the places, landscapes, and ecosystems they encounter in the Colorado River headwaters came to be. Environmental history can offer a powerful tool for bridging this gaping divide between public history and public science in RMNP. Interpretive signs on mountain pine beetle, for instance, might address the specific historical arguments researchers from various fields have made about the outbreak: a brief narrative of the spruce beetle epidemic of 1939-1952, for example; a newspaper report from the 1965-1986 mountain pine beetle infestation blaming fire suppression and limitations on logging; and snippets of interviews with scholars discussing recent research findings: Jason Sibold on the Kawuneeche's fire history, for instance, and Kellen Nelson and Matthew Diskin on lodgepole regeneration. A similar interpretive approach regarding willow die-off could help Park visitors understand the messy history of moose introduction, shifting ungulate management paradigms, and the shifting view of beaver, from nuisances in the eyes of the valley's ranchers and dude ranchers to "ecosystems engineers" in the perspective of present-day scientists who worry that the decline of this species threatens to cause irrevocable changes to the hydrology, ecology, and even the geomorphology of the Colorado River bottomlands. Last but hardly least, the NPS is missing a golden opportunity to help visitors think harder about the roles that non-human nature plays in their own lives. The Service should consider presenting visitors with a more coherent and compelling view of the Kawuneeche's main human populations—the Utes and their Mountain-Tradition predecessors, homesteaders and dude-ranchers, tourists and National Park Service

employees—by detailing the distinct perceptions of and practices toward the natural world that each of these groups brought to the Kawuneeche, as well as the various ways in which these perceptions and practices combined to produce discernible changes to the valley’s environments over time.

Placing historical human-environment interactions at the center of Park interpretation in the Kawuneeche Valley would build upon and reinforce the substantial benefits that have resulted from the growing attention RMNP administrators and staff have devoted to the Park’s west side, particularly over the last two or three decades. One of the main challenges involved in researching the present study, after all, has been the inattention that long characterized Park management in the Kawuneeche. Such neglect occurred for perfectly understandable reasons. Park administration was based on the east side, visitation to the east side has always far exceeded that on the west, and many environmental problems, from elk overpopulation to willow die-off to mountain pine beetle, first garnered concern in the frontcountry around Estes Park. At the same time, the overwhelmingly passive and reactive approach the NPS has pursued toward the Kawuneeche through much of Rocky’s history has not resulted in any demonstrable good. While this report has documented some limitations of well-intentioned but ultimately misguided management practices (stocking rainbow and brook trout for anglers, for instance, or aggressively thinning lodgepole forests in hopes of protecting them from mountain pine beetle) it has found even stronger evidence of situations in which human efforts to avoid or abdicate management have resulted in considerable ecological harm (the NPS’s lack of concern toward the release of moose less than a dozen miles from Rocky’s western border, for example, or the debacle of “natural regulation” as applied to the Kawuneeche’s elk herds). If this environmental history of the Kawuneeche Valley has one implication for NPS policy in the valley, it is that the

landscapes and ecosystems of Rocky's west side will benefit tremendously from the growing attention and concern they are receiving. Management oriented around humility, moderation, and vigilant efforts to monitor ever-unfolding eco-social dynamics in order to determine the consequences of management actions (and management inaction, too) together hold the key to the Kawuneeche's future.

The Kawuneeche, of course, will remain an integral part of larger entities. The valley, as we have seen, has never been an island. Indeed, only in the most limited ways has it ever served as an ecological, hydrological, or political unit. Because the valley comprises just part of an interlocking set of places, systems, institutions, and social constructions—Rocky Mountain National Park, Grand County, the Colorado River Valley, the Rockies, the North American West, and so forth—the NPS can best protect the Kawuneeche by building upon the Service's past history of cooperation with other landowners, land managers, and stakeholders. The environmental challenges facing the valley can be best addressed through research and policy conducted on scales commensurate with the phenomena they address.

Formidable obstacles, of course, hamper the kinds of collaboration required to implement such an approach—interagency rivalry, mistrust among many Grand County residents of the federal government, the apportionment of distinct responsibilities to state and federal entities under the American federalist system, logistical complications, distinct organizational cultures, limited financial resources, competing management priorities, and on and on the list goes. The likelihood that global climate change is already playing a critical role in some of the recent problems this report addresses, meanwhile, suggests that even the most ambitious, inclusive, and well-intentioned cooperative efforts within the immediate vicinity of the Kawuneeche Valley are destined to fall short; regional approaches, after all, cannot solve global problems—though they

may offer our best hope for thoughtful, effective efforts to control the damage these problems already appear to be unleashing.

On a more finite and feasible scale, this examination of the environmental history of the Kawuneeche Valley documents the stark limitations of past approaches to environmental management that have so often proceeded in piecemeal and fragmented ways. Integrating distinct strands of research and management in the valley—fisheries policy and ungulate research, Grand Ditch breach restoration and historic preservation, willow die-off mitigation and trail-building—involves no end of complications. One can even argue that there may be a method behind the uncoordinated, even isolated approaches that have long prevailed in the valley. Perhaps the most powerful insight of ecology, though, is also one of the simplest: Everything is connected. The virtue of environmental history is that it attempts to apply this principle to our understanding of the interactions between humans and other parts of nature in order to understand more clearly the world we inhabit. The promise of a more integrated approach to managing these interactions in the Kawuneeche Valley is that coordination conducted with ample regard for the complexity and interconnectedness of the natural world may well offer our best hope for applying the lessons of history to the pressing problems that the valley faces as it enters its second century under National Park management.

Bibliography

Archival Collections

Fleshuts Hut, Kawuneeche Valley, Rocky Mountain National Park

“Guest Ranches” binder.

“Memories: I Remember When ...” binder.

“Neversummer Ranch” binder.

Grand County Courthouse, Hot Sulphur Springs, Colo.

Grand County Board of County Commissioners. *Proceedings of the Grand County Commissioners.*

Grand Lake Area Historical Society, Grand Lake CO

“Holzwarth’s Neversummer Ranch” brochure, File Cabinet “History”; Drawer “Events, Gen. Info, Places”; Folder “Dude Ranches/Guest Ranches.”

National Archives and Records Administration—Washington, D.C.

General Land Office Records.

Abram Macy, Secs. 1,2, 11, and 12 T4N 76W

Charles A. Clark, Sec. 2, T4N 76W

Edwin E. M. Garlough, Sec. 11 and 12 T4N 76W

Clarence Lee, Sec. 1, T4N 76W

Clinton M. Dewitt, Secs. 24 and 25 T4N 76W

H. Bruce Wiswall, Secs. 2 and 11, T4N 76 W

Isaac P. Mayfield, Secs. 12 and 13, T4N 76W

Jacob Jones, Sec. 24, T4N 76W

John H Schenck, Secs. 2 and 11, T4N 76W

Josephine Young, Sec. 31, T4N, 75W

Mark Christiansen, Sec. 13 T14N 76W

Mary E. Harbison, Sec. 25, T4N 76W

Robert A. Harbison, Sec. 25, T4N 76W

Roy O. House to Secs. 2 and 11, T4N 76 W

National Archives and Records Administration-Denver

Records of Rocky Mountain National Park. Records of the National Park Service. Record Group 79.

Records of Arapaho-Roosevelt National Forest. Records of the United States Forest Service. Record Group 95.

Rocky Mountain National Park Archives

Atkins, Ferrel. Papers.

Hedrick, Charles. Memoirs of Charles Hedrick, 1874-1950. Unpublished Manuscript, RMNP Archives.

Land Records.

NPS Water Resources Division. “Documents Relating to the Grand River Ditch in Rocky Mountain National Park.” 4 vols.

Natural Resource Records.
Ranger's Monthly Reports.
Superintendent's Monthly Reports.

Published Primary Historical Sources and Ecological Studies

Adams, Alva. *Apples and Alfalfa: The Gospel of Irrigation*. Denver: Colorado State Board of Immigration, 1909.

Anderson, C.B., G. M. Pastur, M.V. Lencinas, P.K. Wallem, M.C. Moorman, and A.D. Rosemond. "Do Introduced North American Beavers *Castor canadensis* Engineer Differently in Southern South America? An Overview with Implications for Restoration." *Mammal Review* 39 (2009): 33–52.

Azevedo, R.A., and O.L. Wallis. "Inter-Agency Lake Surveys and Trout Investigations, Rocky Mountain National Park, 1961, including Ten Year Stocking Schedule." *U.S. Department of the Interior, National Park Service, Rocky Mountain National Park*, 1962.

Baker, Bruce W., D. Cooper, and C. Westbrook. "Declining Beaver Populations in Rocky Mountain National Park, Final Report; NRPP 99-04 (ROMO)." *U.S. Department of the Interior, National Park Service, Rocky Mountain National Park*, 2005.

Baker, Bruce W., Heather C. Ducharme, David S. Mitchell, Thomas R. Stanley, and H. Raul Peinetti. "Interaction of Beaver and Elk Herbivory Reduces Standing Crop of Willow." *Ecological Applications* 15(2005): 110–118.

----- "Why aren't there more beaver in Rocky Mountain National Park?." In: *Wildlife & riparian areas: Colorado Riparian Association Seventeenth Annual Conference, October 13-15, 2004, Estes Park, Colorado*, 85-90. Estes Park, Colo.: Colorado Riparian Association, 2004.

Bancroft, Hubert Howe. *History of Nevada, Colorado, and Wyoming, 1540-1888*. Vol. 25 in *The Works of Hubert Howe Bancroft*. San Francisco: The History Company, 1890.

----- *Wild Tribes*. Vol. 1 in *Native Races*. San Francisco: A. L. Bancroft & Co., 1883.

----- *The Native Races of the Pacific States of North America*, vol. III, *Myths and Languages*. New York: D. Appleton and Company, 1875.

----- *Texas and Coahuila, The Works of Hubert Howe Bancroft: History of the north Mexican states and Texas*. 1884-89, 390, n. 27.

Bartolome, J. W. "Impacts of Grazing Intensity and Grazing Systems on Vegetation Composition and Production." In *Developing Strategies for Rangeland Management*. Boulder, Colo.: Westview, 1984. Pages 917-25.

- Beal, J. A. "The Black Hills Beetle." U.S. Department of Agriculture, Bureau of Entomology and Plant Quarantine Report E-403 (Feb., 1937). Typescript in DPL clippings file, "Insects. Beetles."
- , "The Black Hills Beetle, a Serious Enemy of Rocky Mountain Pines." U.S. Department of Agriculture, Farmers' Bulletin No. 1824. Washington, D.C.: U.S. G.P.O., 1939.
- Bear, George D. "Seasonal Distribution and Population Characteristics of Elk in Estes Valley, Colorado." Colorado Division of Wildlife Special Report Number 65. Fort Collins: Colorado Division of Wildlife, 1989.
- Benniger-Traux, Mary, John L. Vankat, and Robert L. Schaefer. "Trail Corridors as Habitat and Conduits for Movement of Plant Species in Rocky Mountain National Park, Colorado, USA." *Landscape Ecology* 6 (1992): 269-78.
- Berger, Joel. *Wild Horses of the Great Basin: Social Competition and Population Size*. Chicago: University of Chicago Press, 1986.
- Binkley, Dan. "Age Distribution of Aspen in Rocky Mountain National Park, USA." *Forest Ecology and Management* 255 (2008): 797-802.
- , Francis J. Singer, Margot Kaye, and Richard Rochelle. "Influence of Elk Grazing on Soil Properties in Rocky Mountain National Park." *Forest Ecology and Management* 185(2003): 239-247.
- Bird, Isabella. *A Lady's Life in the Rocky Mountains*. New York: G.P. Putnam's Sons' The Knickerbocker Press, 1893.
- Brewer, William H. *Rocky Mountain Letters, 1869: Letters Written to My Wife during a Trip to the Rocky Mountains, July to September, 1869*. Denver: Colorado Mountain Club, 1930.
- Brown, William N. to General John Pope, August 30, 1877, in *Letter from the Secretary of the Interior, Transmitting . . . Correspondence Concerning the Ute Indians in Colorado, Ex. Doc. 31, 46th Cong., 2d Sess.* Washington, D.C.: Government Printing Office, 1880.
- Catlin, George. *Letters and Notes on the Manners, Customs, and Conditions of the North American Indians* ... 2 volumes. New York: Wiley and Putnam, 1841.
- Clary, Warren P. and John W. Kinney. "Streambank and Vegetation Response to Simulated Cattle Grazing." *Wetlands* 22 (2002): 139-48.
- Clayton, Jordan A., and Cherie J. Westbrook. "The effect of the Grand Ditch on the abundance of benthic invertebrates in the Colorado River, Rocky Mountain National Park." *River Research and Applications* 24 (September 2008): 975-987.

- Contor, Roger J. "Aquatic Resources Management: Management Action Description." U.S. Department of the Interior, National Park Service, Rocky Mountain National Park, 1976.
- Cooper, David J. "Ecology of Wetlands in Big Meadows, Rocky Mountain National Park, Colorado." *U.S. Department of the Interior, Fish and Wildlife Service, Biological Report (90) 15* (October 1990).
- , "Hydrologic Restoration of a Fen in Rocky Mountain National Park, Colorado, USA." *Wetlands* 18 (September 1998): 335-345.
- Cooper, David J., Lee H MacDonald, Shaunda K. Wenger, and Scott M. Woods. "Hydrologic Restoration of a Fen in Rocky Mountain National Park, Colorado, USA." *Wetlands* 18 (September, 1998): 335-345.
- CRCT Coordination Team. "Conservation Strategy for Colorado River Cutthroat Trout (*Oncorhynchus clarkii pleuriticus*) in the States of Colorado, Utah, and Wyoming." Fort Collins, Colo.: Colorado Division of Wildlife, 2006.
http://wildlife.state.co.us/NR/rdonlyres/C6CA1370-0376-493C-98F0-69C09AEF6363/0/CRCT_Conservation_Strategy_Jun06.pdf. 10.
- CRCT Task Force. *Conservation Agreement and Strategy for Colorado River Cutthroat Trout (Oncorhynchus clarki pleuriticus) in the States of Colorado, Utah, and Wyoming*. Fort Collins, Colo.: Colorado Division of Wildlife, 2001.
- Croft, George. *Grip-Sack Guide of Colorado*. Omaha, Neb.: The Overland Publishing Co., 1881.
- Cuplin, Paul. "Wildlife Habitat Recovery Following Cessation of Livestock Grazing, Report Summary." U.S. Department of the Interior, Bureau of Land Management, Rocky Mountain National Park Library, 1978.
- Daniels, Mark. "Rocky Mountain National Park." *American Forestry* 22 (1916): 724-730.
- Denney, R. "A Proposal for the Reintroduction of Moose into Colorado." Colorado Division of Wildlife, 1976.
- Denney, Richard K. "Moose for Colorado?," *Colorado Outdoors* (March-April, 1967): 16-19.
- Devoto, Bernard. "Let's Close the National Parks." *Harper's Magazine* 207 (1953): 49-52.
- DiGuistini, Scott, Ye Wang, Nancy Y. Liao, Greg Taylor, Philippe Tanguay, Nicolas Feau, Bernard Henrissat, Simon K. Chan, Uljana Hesse-Orce, Sepideh Massoumi Alamouti, Clement K. M. Tsui, Roderick T. Docking, Anthony Levasseur, Sajeet Haridas, Gordon Robertson, Inanc Birol, Robert A. Holt, Marco A. Marra, Richard C. Hamelin, R. Martin Hirst, Steven J.M. Jones, Jörg Bohlmann, and Colette Breuil. "Genome and Transcriptome Analyses of the Mountain Pine Beetle-Fungal Symbiont *Grosmannia*

clavigera, a Lodgepole Pine Pathogen.” *Proceedings of the National Academy of Sciences of the United States of America* 108 (2011), 2504-2509.

Dodge, Richard Irving. *Thirty-Three Years' Personal Experience among the Red Men of the Great West: A Popular Account of Their Religion, Habits, Traits, Exploits, etc., with Thrilling Adventures and Experiences on the Great Plains and in the Mountains of Our Wide Frontier*. Hartford, Ct.: A. D. Worthington & Co., 1882.

Duncan, Clifford. “Rabbit’s Fireball and the Creation of the Rocky Mountains and the Colorado [Grand] River.” In *Native American Oral History and Cultural Interpretation in Rocky Mountain National Park*. Estes Park, Colo.: U.S. Department of the Interior, National Park Service, Rocky Mountain National Park, (2007). Online at http://www.nps.gov/history/history/online_books/romo/oral_history.pdf.

Dungan, J.D., and R. G. Wright. “Summer Diet Composition of Moose in Rocky Mountain National Park, Colorado.” *ALCES* 41(2005): 139-146.

----- . *Distribution and Population Estimation of Shiras Moose in Rocky Mountain National Park*. Unpublished Report. 2006.

Engineering and Mining Journal (VOLUME NUMBER?) (Apr. 15, 1876).

Farnham, Thomas Jefferson. *Travels in the Californias, and Scenes in the Pacific Ocean*. New York: Saxton & Miles, 1844.

Fossett, Frank. *Colorado: A Historical, Descriptive and Statistical Work on the Rocky Mountain Gold and Silver Mining Region*. Denver: Daily Tribune Steam Printing House, 1876.

Gill, R. Bruce. “Elk Seasonal Movements.” In R.N. Denney, R.J. Boyd, E. Bucknall, W. Schuett, P.F. Gilbert, J. Cooney, L.D. Hibbs, G.D. Bear, and R.B. Gill, *Job Completion Report*. N.p.: Colorado Department of Game and Fish, 1967.

Gimbel, Jennifer. “Memorandum; To: Colorado Water Conservation Board; From: Jennifer Gimbel (CWCB Staff); Date: September 13-15, 2010; Subject: Agenda Item 5d, September 2010 CWCB Board Meeting Director’s Report.” *The State of Colorado, Department of Natural Resources, Colorado Water Conservation Board*, 2010. <http://cwcb.state.co.us/public-information/board-meetings/agendas/Documents/Sept2010/5d.pdf>

Gregg, Josiah. *Commerce of the Prairies: The Journal of a Santa Fe Trader*. Dallas, TX: Southwest Press, 1844.

Griffin, Linda, Barb Hicks, Michael Kunde and Molly O’Malley. “Holzwarth Homestead.” *Estes Park, CO: The Rocky Mountain Nature Association*, 1978.

- Gurnell, A. M. "The Hydrogeomorphological Effects of Beaver Dam-Building Activity." *Progress in Physical Geography* 22 (1998): 167-89.
- Guse, N. and O.L. Wallis. "Long range fishery management plan, Rocky Mountain National Park, 1965-1974." *U.S. Department of the Interior, National Park Service, Rocky Mountain National Park*, 1965.
- Hall, Frank. *History of the State of Colorado . . .* 4 volumes. Chicago: Blakely Printing Company, 1895.
- Harrington, Thomas C. "Ecology and Evolution of Mycophagous Bark Beetles and Their Fungal Partners." In *Ecological and Evolutionary Advances in Insect-Fungal Associations*. F. E. Vega and M. Blackwell, eds. New York: Oxford University Press, 2005. Online version at <http://www.public.iastate.edu/~tcharrin/Mycophagy4%2009.pdf>
- Hirsch, Christine L., Shannon E. Albeke, and Thomas P. Nesler. "Range-Wide Status of Colorado River Cutthroat Trout (*Oncorhynchus clarkii pleuriticus*)." *Colorado Division of Wildlife*. 2005, http://wildlife.state.co.us/NR/ronlyres/FB21A867-6985-4D11-B205-573D8C6F5407/0/FINAL_CRCTStatusReview_04042006.pdf, p. 14.
- Hunter, Gilbert N., and Lee E. Yeager. "Big Game Management in Colorado." *The Journal of Wildlife Management* 13 (October 1949): 392-411.
- James, Thomas. *Three Years among the Indians and Mexicans: The 1846 Edition Unabridged*. Introduction by A. P. Nasatir. 1846; repr. Philadelphia: Lippincott, 1962.
- Kashian, D. M., W. H. Romme, and C. M. Regan. "Reconciling Divergent Interpretations of Quaking Aspen Decline on the Northern Colorado Front Range." *Ecological Applications* 17 (2007): 1296-1311.
- Keene, F. P. "War on the Pine Beetle: How Men and Money Are Fighting to Save Our Western Pine from the Beetle Hordes." *American Forestry* (Nov. 1923): 689-91.
- Kufeld, R. C. "Status and Management of Moose in Colorado." *Alces* 30 (1994): 41-44.
- and D. C. Bowden. "Movements and Habitat Selection of Shiras Moose (*Alces Alces Shirasi*) in Colorado." *Alces* 32 (1996): 85-99.
- Leopold, A.S., S.A. Cain, C.M. Cottam, I.N. Gabrielson, and T.L. Kimball. *Wildlife Management in the National Parks: The Leopold Report*. March 4, 1963. Online at: http://www.nps.gov/history/online_books/leopold/leopold7.htm.
- Lubow, Bruce C. Francis J. Singer, Therese L. Johnson, and David C. Bowden. "Dynamics of Interacting Elk Populations within and Adjacent to Rocky Mountain National Park." *The Journal of Wildlife Management* 66 (July 2002): 757-775.

- Mayer, Andrea C. and Veronika Stöckli. "Long-Term Impact of Cattle Grazing on Subalpine Forest Development and Efficiency of Snow Avalanche Production." *Arctic, Antarctic, and Alpine Research* 37 (2005): 521-26.
- Metcalf, Jessica L., Matthew R. Siegle, and Andrew P. Martin. "Hybridization Dynamics between Colorado's Native Cutthroat Trout and Introduced Rainbow Trout." *The Journal of Heredity* 99 (March/April 2008): 149-156.
- Mills, Enos Abijah. *The Story of Estes Park*. Longs Peak and Estes Park, Colo.: The Author, 1911.
- "The Beaver and His Works," 1909, hypertext at:
<http://abob.libs.uga.edu/bobk/beavwork.html>.
- *Wild Life on the Rockies*. Boston and New York: Houghton Mifflin Co., 1909.
- Mullan, J. W. *Annual Project Report-Fishery Management Program 1968*. N.P.: U.S. Department of the Interior, Fish and Wildlife Service, Bureau of Sport Fisheries and Wildlife, Division of Fishery Services, Rocky Mountain National Park, Larimer, Grand and Boulder counties Colorado, 1968.
- Mullan, J. W. *Annual Project Report-Fishery Management Program 1972*. Vernal, Ut.: U.S. Department of the Interior, Fish and Wildlife Service, Bureau of Sport Fisheries and Wildlife, Division of Fishery Services, Rocky Mountain National Park, Larimer, Grand and Boulder counties Colorado, 1972.
- Murie, Olaus J. *The Elk of North America*. Harrisburg, Pa. and Washington, D.C.: Stackpole Company and Wildlife Management Institute, 1951.
- Muths, Thomas B. "Holzwarth Ranch, Rocky Mountain National Park: Historic Structures Report Architectural Section." Jackson, Wyo.: AIA & Associates Restoration Architects & Planners, 1979.
- Muths, Thomas B. and J. Henry Chambers (AIA & Associates). "Cyclical Maintenance Program, Holzwarth Ranch Historic District, Rocky Mountain National Park." Estes Park, Colo.: U.S. Department of the Interior, National Park Service, Rocky Mountain National Park, 1977.
- Nettleton, E. S. "The Reservoir System of the Cache La Poudre Valley." *U.S. Department of Agricultural, Agricultural Experiment Stations Bulletin No. 92*, 1901.
- "North Park Moose Herd Booming." *Wildlife News* 12 (May-June 1987): 4.
- Packard, Fred M. "A Survey of the Beaver Population of Rocky Mountain National Park, Colorado." *Journal of Mammalogy* 28 (August 1947): 219-227.

- Patterson, Kyle, and Jeff Dorschner. "Civil Complaint Filed to Recover Damages from Grand River Ditch Breach in Rocky Mountain National Park." *U.S. Department of the Interior, National Park Service, Rocky Mountain National Park*. August 31, 2006.
http://www.nps.gov/romo/parknews/grand_river_ditch.htm
- Perky, J.S. *Larimer County Homes and Mines - - Where to Outfit for the North Park and Middle Park Mining Districts*. Fort Collins, Colo.: Courier Publishing Company, 1880.
- Pettee, Florence M. "The Motorist's Colorado." *Motor Travel* 11 (1919): 9-12.
- Pinchot, Gifford. *Letter from signed by James Wilson to Gifford Pinchot, Feb. 1, 1905*, quoted in U.S. Forest Service, "Pinchot and Utilitarianism," *The Greatest Good*,
<http://www.fs.fed.us/greatestgood/press/mediakit/facts/pinchot.shtml>
- Powell, John W. *The Exploration of the Colorado River and Its Canyons*. New York City: Penguin Books, 1987.
- "Indian Linguistic Families of America, North of Mexico." In *Seventh Annual Report of the Bureau of Ethnology to the Secretary of the Smithsonian Institution 1885-'86*, edited by J.W. Powell, 1-142. Washington, D.C.: G.P.O., 1891.
- *Report of Explorations in 1873 of the Colorado of the West and Its Tributaries*. Washington, D.C.: G. P. O., 1874.
- "Report on the Indians of the Numa Stock." In *Anthropology of the Numa: John Wesley Powell's Manuscripts on the Numic Peoples of Western North America 1868-1880*, edited by Don D. Fowler and Catherine S. Fowler, 35-68. Washington, DC: Smithsonian Institution Press, 1971.
- "Sketch of the Mythology of the North American Indians." In *Smithsonian Institution Bureau of Ethnology, First Annual Report*. Washington, D.C.: Government Printing Office, 1881.
- Pugh, Evan, and Eric Small. "The Impact of Pine Beetle Infestation on Snow Accumulation and Melt in the Headwaters of the Colorado River." *Ecohydrology* (2011), published online, wileyonlinelibrary.com.
- Ramaley, William. *Trails and Trailbuilders of Rocky Mountain National Park*. Unpublished mss., RMNP Library.
- Raymond, Rossiter W. *Statistics of Mines and Mining in the States and Territories West of the Rocky Mountains being the 8th Annual Report*. Washington: Government Printing Office, 1877.
- Reed, Verner Z. "The Ute Bear Dance." *American Anthropologist* 9 (July, 1896): 237-244.

- Rensch, H.E. "Historical Background for the Rocky Mountain National Park." *Berkeley, California: U.S. Department of the Interior, National Park Service, Field Division of Education*, 1935.
- Retzer, John L., H.M. Swope, and J.D. Remington. "Suitability of physical factors for beaver management in the Rocky Mountains of Colorado, federal aid project W-83-R." *Colorado Department of Game and Fish, Technical Bulletin No. 2*, 1956.
- Rosell, F., O. Bozer, P. Collen, and H. Parker. "Ecological Impact of Beavers *Castor fiber* and *Castor canadensis* and Their Ability to Modify Ecosystems." *Mammal Review* 35 (2005): 248–276.
- Rothwell, Richard P., and Rossiter W. Raymond (eds.). "Hydraulic Mining and Agriculture." *Engineering and Mining Journal* 21(April 15, 1876): 365.
- Ryan, Sandra, and Nel Caine. *Effects of Flow Diversion on Downstream Channel Form in Mountain Streams*. Colorado Water Resources Research Institute Completion Report No. 176. Fort Collins: Colorado Water Resources Research Institute, 1993.
- Sage, Rufus. *Scenes in the Rocky Mountains, and in Oregon, California, New Mexico, Texas, and the Grand Prairies; Or, Notes by the Way, During an Excursion of Three Years, with a Description of the Countries Passed Through, Including Their Geography, Geology, Resources, Present Condition, and the Different Nations Inhabiting Them, by a New Englander*. Philadelphia: Carey & Hart, 1846.
- Schuster, E., S.S. Johnson, and J.G. Taylor. "Wilderness experience in Rocky Mountain National Park 2002: report to RMNP." *U.S. Geological Survey Open-File Report 2003-445 and NPS Study # ROMO 02034*, 2004.
- Sherriff, Rosemary L., Thomas T. Veblen, and Jason S. Sibold. "Fire History in High Elevation Subalpine Forests in the Colorado Front Range." *Écoscience* 8 (2001), 378. 369-80.
- Sibold Jason S., and Thomas T. Veblen, "Relationships of Subalpine Forest Fires in the Colorado Front Range with Interannual and Multidecadal-Scale Climatic Variation." *Journal of Biogeography* 33 (2006): 833-842.
- Sibold, Jason S., Thomas T. Veblen, Kathryn Chipko, Lauren Lawson, Emily Mathis, and Jared Scott. "Influences of Secondary Disturbances on Lodgepole Pine Stand Development in Rocky Mountain National Park." *Ecological Applications* 17 (2007): 1638-1655.
- Singer, Francis J., Guiming Wang, and N. Thompson Hobbs. "The Role of Ungulates and Large Predators on Plant Communities and Ecosystem Processes in Western National Parks." In *Mammal Community Dynamics: Management and Conservation in the Coniferous*

Forests of Western North America, edited by Cynthia J. Zabel and Robert G. Anthony, 444-486. Cambridge: Cambridge University Press, 2003.

- Singer, F.J. and L.C. Zeigenfuss, compilers. "Ecological evaluation of the Abundance and Effects of Elk Herbivory in Rocky Mountain National Park, Colorado, 1994-1999." *Final report to the National Park Service, RMNP on Cooperative Agreement No. 1445-0009-94-1074 (USGS) Subagreement 2 between the NPS, Biological Resources Discipline of USGS, and Natural Resources Ecology Laboratory, Colo. State Univ. Open File Report 02-208*, 2002.
- Smith, J. Alden. *Report on the Development of the Resources of Colorado*. Denver: Times Public Printer, 1883.
- Stevens, D.R. Moose in Rocky Mountain National Park. Unpublished Park Report, 1988.
- Stevens, D. R. and J. Mullan. "Aquatic resource survey: 1975." *U.S. Department of the Interior, National Park Service, Rocky Mountain National Park*, 1976.
- Stumph, Bradley P. "The Summer Forage Quality of Willow Communities and Its Influence on Moose Foraging Ecology in Rocky Mountain National Park, CO." Master of Science's Thesis, University of Idaho, 2005.
- Summer, Rebecca M. "Geomorphic Impacts of Horse Traffic on Montane Landforms," *Journal of Soil and Water Conservation* 41 (1986): 126-28.
- Swift, Lloyd W. "A Partial History of the Elk Herds of Colorado." *Journal of Mammalogy* 26 (1945): 114-119.
- Tait, C[larrence]. E[dward]. "Storage of Water on Cache La Poudre and Big Thomson Rivers." *U.S. Department of Agriculture, Office of Experiment Stations, Bulletin No. 134*, 1903.
- Toll, Oliver W. *Arapaho Names and Trails: Report of a 1914 Pack Trip*. Privately Published, 1962.
- Toy, Terrence, Donna Ryder, and David Longbrake. "Identification of Potential Sediment Sources in Kawuneeche Valley Using a Geographic Information System." *Proceedings of the Symposium on Geographic Information Systems and Water Resources*. Mobile, Ala.: American Water Resources Association AWRA 1 (1993): 141-146.
- Trueblood, Ted. "Too Many Elk." *Field and Stream* (July 1963): 36-39, with unpaginated continuation
- Union Pacific Railway. "System Map of Rocky Mountain National (Estes) Park Denver Mountain Parks." 1926.

United States. *The Statutes at Large of the United States of America from the Organization of the Government in 1789 to March 3, 1845*, vol. 3. Boston: Charles C. Little and James Brown, 1846.

-----. *The Statutes at Large of the United States of America from December 5, 1859 to March 3, 1863*, vol. 12. Boston: Little, Brown and Company, 1863.

-----. Treaty with the Utah-Tabeguache. Oct. 7, 1863. 13 Stat. 67. In *Treaties*. Vol. 2 of *Indian Affairs: Laws and Treaties*. Edited by Charles J. Kappler. Washington, D.C.: G.P.O., 1904): 856-59.

United States. Bureau of the Census. United State Census. Grand County. 1910. Manuscript rolls.

United States Congress. Act of May 20, 1862 (Homestead Act). Public Law 37-64. May 20, 1862. Record Group 11. General Records of the United States Government. NARA-DC. Online at: <http://www.ourdocuments.gov/doc.php?doc=31>.

-----. Act of Jan. 26, 1915. 38 Stat. 798.

-----. Act of Aug. 25, 1916, 39 Stat. 535.

-----. *Indians in Colorado*. Ex. Doc. 31, 46th Cong., 2d Sess. Washington, D.C.: G.P.O., 1880.

United States Department of Justice. "Water Supply And Storage Company To Pay \$9 Million For Damages To Rocky Mountain National Park." *U.S. Department of the Interior, National Park Service, Rocky Mountain National Park*. May 5, 2008.
http://www.nps.gov/romo/parknews/pr_wssc_justice.htm

United States Department of the Interior. National Park Service. *Elk and Vegetation Management Plan - Rocky Mountain National Park, CO*. Washington, D.C.: G. P. O., 2007.

-----. "Final Environmental Impact Statement, Elk and Vegetation Management Plan." *United States Department of the Interior, National Park Service, Rocky Mountain National Park*. December 2007.
http://www.nps.gov/romo/parkmgmt/upload/evmp_exec_sum_dec_07.pdf

-----. Final Land Protection Plan, Rocky Mountain National Park. Washington, D.C.: G. P. O., 1984.

-----. Final Master Plan for Rocky Mountain National Park. Washington, D.C.: G. P. O., 1976.

-----. Invasive Exotic Plant Management Plan and Environmental Assessment, Rocky Mountain National Park. Washington, D.C.: G. P. O., 2003.

- , "A Report to the Superintendent for A Back Country Management Plan in Rocky Mountain National Park." May, 1965. Copy in RMNP Library.
- "Rocky Mountain National Park March 2010 Fact Sheet, Grand Ditch Breach Restoration – Environmental Impact Statement." *U.S. Department of the Interior, National Park Service, Rocky Mountain National Park*. March 2010.
http://www.nps.gov/romo/parkmgmt/grand_ditch_breach_rest_eis.htm.
- United States Fish and Wildlife Service. "Rocky Mountain National Park Fisheries Management Report, 1979." Lakewood, Colo.: Colorado Fisheries Assistance Office, 1979.
- United States Forest Service. Rocky Mountain Region, "Aerial Survey Highlights for 2010,"
http://www.fs.usda.gov/wps/portal/fsinternet!/ut/p/c5/04_SB8K8xLLM9MSSzPy8xBz9CP0os3gjAwhwtDDw9_AI8zPyhQoYAOUjMeXDfODy-HWHg-zDrx8kb4ADOBro-3nk56bqF-RGGGSZOCaCapi8eX8!/dl3/d3/L2dJQSEvUUt3QS9ZQnZ3LzZfMjAwMDAwMDBBODBPSEhWTjJNMDAwMDAwMDA!/?navtype=BROWSEBYSUBJECT&cid=stelprd b5253133&navid=0910000000000000&pnavid=null&ss=1102&position=Not%20Yet%20Determined.Html&ttype=detail&pname=Region%202-%20Home
- United States Senate. *Condition of the Indian Tribes: Report of the Joint Special Committee Appointed Under the Resolution of March 3, 1865*. 39th Cong., 2d Sess., Senate Report No. 156. Washington, D.C.: G.P.O., 1867.
- Veblen, Thomas T. "Disturbance Patterns in Southern Rocky Mountain Forests." In *Forest Fragmentation in the Southern Rocky Mountains*. Edited by R.L. Knight, F.W. Smith, S.W. Buskirk, W.H. Romme, and W.L. Baker. Pages 31-54. Niwot: University Press of Colorado, 2000.
- , Keith S. Hadley, Marion S. Reid, and Alan J. Rebertus. "The Response of Subalpine Forests to Spruce Beetle Outbreak in Colorado." *Ecology* 72 (1991): 213-31.
- Wagar, J.V.K. "Recreation and Wildlife Problems of the Central Rocky Mountains." *Journal of Forestry* 52 (March 1, 1954): 186-190.
- Westbrook, Cherie J., David J. Cooper, and Bruce W. Baker. "Beaver Dams and Overbank Floods Influence Groundwater–Surface Water Interactions of a Rocky Mountain Riparian Area." *Water Resources Research* 42 (June 2006). Online at www.interscience.wiley.com.
- Watrous, Ansel. *History of Larimer County, Colorado*. Fort Collins, Colo.: The Courier Printing and Publishing Company, 1911.
- Wilderness Act. U.S. Code. Vol. 6, secs. 1131-1136 (1964).

Willard, B.E. "Effects of Visitors on Natural Ecosystems in Rocky Mountain National Park, Five-Year Study, 1958/59-1962/63." *U.S. Department of the Interior, National Park Service*, 1964.

Willy, John. "Five Days on Horseback in Rocky Mountain National Park." *The Hotel Monthly* 24 (October 1916): 40-53.

Worrall, J.J., L. Egeland, T. Eager, R. A. Mask, E. W. Johnson, P. A. Kemp, and W. D. Shepperd. "Rapid Mortality of *Populus Tremuloides* in Southwestern Colorado, USA." *Forest Ecology and Management* 255 (2008), 686-96.

Wright, George M., Joseph S. Dixon, and Ben H. Thompson. *Fauna of the National Parks of the United States: A Preliminary Survey of Faunal Relations in National Parks*, Contribution of Wild Life Series Fauna No. 1. Washington, D.C.: GPO, 1933.

Vote, Carrie Leimer. "A Week at Grand Lake." *The Trail* 2, no. 5 (1909): 14-16.

Zeigenfuss, Linda C., Francis J. Singer, Stephen A. Williams, and Therese L. Johnson. "Influences of Herbivory and Water on Willow in Elk Winter Range." *The Journal of Wildlife Management* 66 (July 2002): 788-795.

Newspapers and Magazines

Colorado Miner (Georgetown)

Denver Post

Estes Park Trail

Fort Collins Courier

Grand Lake Prospector

Greeley Tribune

High Country News

Longmont Times-Call

Middle Park Times

New York Times

Rocky Mountain News and *Empire Magazine of the Rocky Mountain News*

Sky-Hi News

Interviews

David Cooper interview with Thomas G. Andrews, Boulder, Colorado, Oct. 1, 2010, audio file and transcript appended to final draft of this report, copies in RMNP Archives.

Chris Kennedy interview with Thomas G. Andrews, Denver, Colorado, November 24, 2010, audio file and transcript appended to final draft of this report, copies in RMNP Archives.

Jason Sibold interview with Thomas G. Andrews, Ft. Collins, Colorado, November 22, 2010, audio file and transcript appended to final draft of this report, copies in RMNP Archives.

Published Secondary Sources

Abbott, Carl, Stephen J. Leonard, and David McComb. *Colorado: A History of the Centennial State*. Rev. ed. Boulder: Colorado Associated University Press, 1982.

- , Stephen J. Leonard and Thomas J. Noel. *Colorado: A History of the Centennial State*. 4th ed. Boulder: University Press of Colorado, 2005.
- Abernathy, Dan. "Souvenirs of a Cowboy." *American Cowboy* (August, 1996): 54-58.
- Adams, Arthur W. "Migration." Pages 301-321 in Jack Ward Thomas and Dale E. Toweill, comps. and eds., *Elk of North America: Ecology and Management*. Harrisburg, Pa.: Stackpole Books, 1982.
- Anderson, Mark S. "Hunters of the Shining Mountains: The History of Hunting on the Western Slope of the Colorado Front Range." Master's Thesis, University of Montana, 2003.
- Anderson, M. Kat. *Tending the Wild: Native American Knowledge and the Management of California's Natural Resources*. Berkeley and Los Angeles: University of California Press, 2006.
- Andrews, Thomas G. *Killing for Coal: America's Deadliest Labor War*. Cambridge, Mass.: Harvard University Press, 2008.
- , "Made By Toile'?: Tourism, Labor, and the Construction of the Colorado Landscape, 1859-1917." *Journal of American History* 92 (2005): 837-63.
- , "Tata Atanasio's Unlikely Tale of Utes, Nuevomexicanos, and the Settling of the San Luis Valley." *New Mexico Historical Review* 75 (2000): 4-41
- Armstrong, David M. *Rocky Mountain Mammals: A Handbook of Mammals of Rocky Mountain National Park and Vicinity*. 3rd ed. Boulder: University Press of Colorado, 2008.
- , James P. Fitzgerald and Carron A. Meaney. *Mammals of Colorado* 2nd ed. Boulder: University Press of Colorado and Denver Museum of Science and Nature, 2011.
- Athearn, Frederic J. "An Isolated Empire: A History of Northwest Colorado." Cultural Resources Series No. 2 - Second Edition. Colorado: Bureau of Land Management, 1977.
- Athearn, Robert G. *The Denver and Rio Grande Western Railroad: Rebel of the Rockies*. New Haven, Ct.: Yale University Press, 1962.
- , *The Mythic West in the Twentieth-Century America*. Lawrence: University Press of Kansas, 1986.
- Baker, William L. *Fire Ecology in Rocky Mountain Landscapes*. Washington, D.C.: Island Press, 2009.

- ."Indians and Fire in the Rocky Mountains: The Wilderness Hypothesis Renewed." In *Fire, Native Peoples, and the Natural Landscape*, edited by Thomas Vale, 41-76. Washington, D.C.: Island Press, 2002.
- , and Thomas T. Veblen. "Spruce Beetles and Fires in the Nineteenth Century Subalpine Forests of Western Colorado." *Arctic and Alpine Research* 22 (1990): 65-80.
- Baldwin, Susan. *Historic Resource Study: Dutchtown and Lulu City, Rocky Mountain National Park, Colorado*. Washington, D.C.: G.P.O., 1980.
- Barr, Juliana. "Geographies of Power: Mapping Indian Borders in the 'Borderlands' of the Early Southwest." *The William and Mary Quarterly* 68 (January 2011): 10.
- Barrera, Lina. "Portraits of Climate Change: The Rocky Mountains," Worldwatch Institute, 2011. Online at: <http://www.worldwatch.org/node/6160> (accessed Oct. 4, 2011).
- Barrows, Pete, and Judith Holmes. *Colorado's Wildlife Story*. Denver, CO: Colorado Division of Wildlife, 1990.
- Bartlett, Richard A. *Great Surveys of the American West*. Norman, OK: University of Oklahoma Press, 1962.
- Basso, Keith H. *Wisdom Sits in Places: Landscape and Language among the Western Apache*. Albuquerque: University of New Mexico Press, 1996.
- Benedict, Audrey DeLella. *A Sierra Club Naturalist's Guide: The Southern Rockies*. San Francisco: Sierra Club Books, 1991.
- Benedict, James B. "Along the Great Divide: Paleoindian Archaeology of the High Colorado Front Range." In *Ice Age Hunters of the Rockies*, edited by D. J. Stanford and J. S. Day, 343-359. Niwot: University Press of Colorado, 1992.
- ."A Fasting Bed and Game Drive Site on the Continental Divide in the Colorado Front Range." *Southwestern Lore* 53 (1987): 1-27.
- ."Arapaho Pass: Glacial Geology and Archeology at the Crest of the Colorado Front Range (Report No. 3)". *Ward, CO: Center for Mountain Archaeology Research*, 1985.
- ."Archeology of the Coney Creek Valley (Report No. 1)". *Ward, CO: Center for Mountain Archaeology*, 1990.
- ."Effects of Changing Climate on Game-Animal and Human Use of the Colorado High Country (U.S.A.) since 1000 B.C." *Arctic, Antarctic, and Alpine Research* 31 (1999): 1-15.

- "Footprints in the Snow: High-Altitude Cultural Ecology of the Colorado Front Range." *Arctic and Alpine Research* 24 (1992): 1-16.
- "The Fourth of July Valley: Glacial Geology and Archeology of the Timberline Ecotone (Report No. 2)". *Ward, CO: Center for Mountain Archaeology Research*, 1982.
- "Game Drives of the Devil's Thumb Pass Area (Report No. 8)" in E.S. Cassells, ed., *This Land of Shining Mountains: Archeological Studies in Colorado's Indian Peaks Wilderness Area*. Ward, CO: Center for Mountain Archaeology, 2000.
- *The Game Drives of Rocky Mountain National Park*. Ward, Colo.: Center for Mountain Archeology, 1966.
- "Getting Away from It All: A Study of Man, Mountains, and the Two-Drought Altithermal." *Southwestern Lore* 45 (1979): 1-12.
- "Rethinking the Fourth of July Valley Site: A Study in Glacial and Periglacial Geoarchaeology." *Geoarchaeology* 20 (2005): 797-836.
- Benedict, James B., and Byron L. Olson. "The Mount Albion Complex: A Study of Prehistoric Man and the Altithermal (Report No. 1)." *Ward, CO: Center for Mountain Archaeology Research*, 1987.
- Berwanger, Eugene H. *The Rise of the Centennial State: Colorado Territory, 1861-76*. Urbana: University of Illinois Press, 2007.
- Bettinger, Robert L. "Cultural, Human, and Historical Ecology in the Great Basin: Fifty Years of Ideas about Ten Thousand Years of Prehistory." In *Advances in Historical Ecology*, edited by William Balee, 169-189. New York: Columbia University Press, 1998.
- Blackhawk, Ned. "Julian Steward and the Politics of Representation: A Critique of Anthropologist Julian Steward's Ethnographic Portrayals of the American Indians of the Great Basin." *American Indian Research and Culture Journal* 21 (1997): 61-82.
- *Violence over the Land: Indians and Empires in the Early American West*. Cambridge, MA: Harvard University Press, 2006.
- Black, Kevin D. "Archaic Continuity in the Colorado Rockies: The Mountain Tradition." *Plains Anthropologist* 36 (1991): 1-29.
- Black, Robert C. *Island in the Rockies: The History of Grand County, Colorado, to 1930*. Boulder, CO: Pruett Publishing Co., 1969.
- Bollinger, Edward T. and Frederick Bauer. *The Moffat Road*. Chicago: Swallow Press, 1962.

- Borne, Lawrence R. *Dude Ranching: A Complete History*. Albuquerque: University of New Mexico Press, 1983.
- , "Dude Ranching in the Rockies." *Montana: The Magazine of Western History* 38 (Summer 1988): 14-27.
- Brett, John A. *Ethnographic Assessment and Documentation of Rocky Mountain National Park*. Denver: University of Colorado Department of Anthropology, 2003. Online at http://www.nps.gov/history/history/online_books/romo/ethnography/brett.pdf.
- Brooks, James F. *Captives and Cousins: Slavery, Kinship, and Community in the Southwest Borderlands*. Chapel Hill, NC: University of North Carolina Press, 2002.
- Brosnan, Katherine A. *Uniting Mountain and Plain: Cities, Law, and Environmental Change along the Front Range*. Albuquerque, NM: University of New Mexico Press, 2002.
- Brown, Dee. *Bury My Heart at Wounded Knee: An Indian History of the American West*. New York City: An Owl Book, Henry Holt and Company, 1970.
- Brunswick, Robert H. "Prehistoric, Protohistoric, and Early Historic Native American Archaeology of Rocky Mountain National Park: Volume 1—Final Report of Systemwide Archaeological Inventory Program Investigations by the University of Northern Colorado." Estes Park, CO: Rocky Mountain National Park, 2005.
- Brunswick, Robert H. "Paleoindian Cultural Landscapes and Archaeology of North-Central Colorado's Southern Rockies." Pages 261-310 in Robert H. Brunswick and Bonnie L. Pitblado, eds. *Frontiers in Colorado Paleoindian Archaeology: From the Dent Site to the Rocky Mountains*. Boulder: University Press of Colorado, 2007.
- Brunswick, Robert H. and Bonnie L. Pitblado. *Frontiers in Colorado Paleoindian Archaeology: From the Dent Site to the Rocky Mountains*. Boulder: University Press of Colorado, 2007.
- Brunswick, Robert, Sally McBeth, and Louise Elinoff. "Re-Enfranchising Native Peoples in the Southern Rocky Mountains: Integrated Contributions of Archaeological and Ethnographic Studies on Federal Lands." In *Post-Colonial Perspectives on Archaeology*, edited by Peter Bikoulis, D. Lacroix, and M. Pueramaki-Brown, 55-69. Calgary, Alb.: Chacmool Archaeological Association, 2009.
- Buchholtz, C.W. *Rocky Mountain National Park: A History*. Boulder: Colorado Associated University Press, 1983.
- Buhs, Joshua Blu. *Fire Ant Wars: Nature, Science, and Public Policy in Twentieth-Century America*. Chicago: University of Chicago Press, 2004.
- Burnett, Frank Jones. *Golden Memories of Colorado*. New York: Vantage Press, 1965.

- Butler, William M. "The Ranches and Resorts of Rocky Mountain National Park." Unpublished draft report. Rocky Mountain National Park, Estes Park, CO, 2004.
- ."Historic Archeology of Rocky Mountain National Park." *U.S. Department of the Interior, National Park Service, Rocky Mountain National Park*, 2005.
- Cairns, Mary Lyons. *Grand Lake: The Pioneers*. Denver, CO: The World Press, Inc., 1946.
- . *Grand Lake in the Olden Days*. Denver, CO: The World Press Inc., 1971.
- Callaway, Donald, Joel Janetski, and Omer C. Stewart. "Ute." In *Handbook of North American Indians*, vol. 11, *Great Basin*, edited by Warren L. D'Azevedo, 336-367. Washington, DC: Smithsonian Institution, 1986.
- Calloway, Colin G. *New Worlds for All: Indians, Europeans, and the Remaking of Early America*. Baltimore: The Johns Hopkins University Press, 1998.
- . *One Vast Winter Count: The Native American West before Lewis and Clark*. Lincoln: University of Nebraska Press, 2003.
- Campbell, Robert B. "Newlands, Old Lands: Native American Labor, Agrarian Ideology, and the Progressive-Era State in the Making of the Newlands Reclamation Project, 1902-1926." *Pacific Historical Review* 71 (2002): 203-239.
- Campbell, Lyle. *Historical Linguistics: An Introduction*. Cambridge, MA: MIT Press, 1998.
- Carr, Ethan. *Wilderness by Design: Landscape Architecture and the National Park Service*. Lincoln: University of Nebraska Press, 1998.
- Cartmill, Matt. *A View to a Death in Morning: Hunting and Nature through History*. Cambridge, MA: Harvard University Press, 1993.
- Cassells, E. Steve. *Archaeology of Colorado*. Rev. ed. Boulder: Johnson Books, 1997.
- Chase, Alston. *Playing God in Yellowstone: The Destruction of America's First National Park*. San Diego, New York, and London: Harvest Books, 1987.
- Chimner, Rodney and David Cooper. "Carbon Dynamics of Pristine and Hydrologically Modified Fens in the Southern Rocky Mountains." *Canadian Journal of Botany* 81 (May, 2003): 477-491.
- Chittenden, Hiram Martin. *The American Fur Trade of the Far West*. Foreword by James P. Ronda. Introduction by Stallo Vinton. 2 volumes. 1935; reprint, Lincoln: University of Nebraska Press, 1986.

- Christian, David. *Maps of Time: An Introduction to Big History*. Berkeley and Los Angeles: University of California Press, 2004.
- Clemmer, Richard O. and Omer C. Stewart. "Treaties, Reservations, and Claims." In *Great Basin*. Edited by Warren L. D'Azevedo. Vol. 11 of *Handbook of North American Indians*. Pages 525-557. Washington, D.C.: Smithsonian Institution, 1986.
- Cloud, Barbara Lee. *The Coming of the Frontier Press: How the West Was Really Won*. Evanston, Ill.: Northwestern University Press, 2008.
- Coel, Margaret. *Chief Left Hand: Southern Arapaho*. Norman: University of Oklahoma Press, 1988.
- Cole, Sally J. *Legacy on Stone: Rock Art of the Colorado Plateau and Four Corners Region*. Boulder: Johnson Books, 1990.
- Coleman, Jon T. "The Prim Reaper: Muriel Sibell Wolle and the Making of Western Ghost Towns." *Mining History Journal* (2001): 10-17.
- . *Vicious: Wolves and Men in America*. New Haven, CT: Yale University Press, 2006.
- Cohen, Benjamin. *Notes from the Ground: Science, Soil, and Society in the American Countryside*. New Haven, CT: Yale University Press, 2009.
- Cohen, Ruth Schwartz. *More Work for Mother: The Ironies of Household Technology from the Open Hearth to the Microwave*. New York: Basic Books, 1983.
- Cronon, William. "A Place for Stories: Nature, History, and Narrative." *Journal of American History* 78 (March, 1978): 1347-1376.
- . *Changes in the Land: Indians, Colonists, and the Ecology of New England*. New York: Hill & Wang, 1983.
- . "Landscapes of Abundance and Scarcity," in *Oxford History of the American West*, ed. Clyde A. Milner II, Carol A. O'Connor, and Martha A. Sandweiss. New York: Oxford University Press, 1994.
- . *Nature's Metropolis: Chicago and the Great West*. New York City: W. W. Norton & Company, 1992.
- Crosby, Alfred W. *Ecological Imperialism: The Biological Expansion of Europe, 900-1900*. New York: Cambridge University Press, 1986.
- Crowley, John M. "Ranching in the Mountain Parks of Colorado." *Geographical Review* 65 (October 1975): 445-460.

Cullingham, Catherine I., Janice E. K. Cooke, Sophie Dang, Corey S. Davis, Barry J. Cooke and David W. Coltman. "Mountain Pine Beetle Host-Range Expansion Threatens the Boreal Forest." *Molecular Ecology* 20 (2011): 2157-71.

Current Anthropology vol. 50, no. 5 (October 2009).

Curtis, Kent. "Producing a Gold Rush: National Ambitions and the Northern Rockies, 1853-1863." *Western Historical Quarterly* 40 (Autumn, 2009): 275-297.

Trotter, Patrick C. *Cutthroat: Native Trout of the West*. Boulder: Colorado Associated University Press, 1987.

Decker, Peter R. *"The Utes Must Go": American Expansion and the Removal of a People*. Golden, Colo.: Fulcrum, 2004.

Deloria, Philip J. "Technology: I Want to Ride in Geronimo's Cadillac." In *Indians in Unexpected Places*. Lawrence: University Press of Kansas, 2004.

Doerner, James P. "Late Quaternary Prehistoric Environments of the Colorado Front Range." Pages 11-38 in Robert H. Brunswig and Bonnie L. Pitblado, eds. *Frontiers in Colorado Paleoindian Archaeology: From the Dent Site to the Rocky Mountains*. Boulder: University Press of Colorado, 2007.

Donahue, Brian. *The Great Meadow: Farmers and the Land in Colonial Concord*. New Haven, Ct.: Yale University Press, 2004.

Drinnon, Richard. *Facing West: The Metaphysics of Indian-Hating and Empire-Building*. 1980; repr., Norman: University of Oklahoma Press, 1997.

Drummond, Alexander. *Enos Mills: Citizen of Nature*. Niwot: University Press of Colorado, 1995.

"Dude Ranch Is...1874-1986, A." *Grand County Historical Association Journal* 6 (June, 1986).

Dunlap, Thomas R. *Saving America's Wildlife: Ecology and the American Mind, 1850-1990*. Princeton, NJ: Princeton University Press, 1988.

Eldredge, Scott J. and Fred R. Gowans. "The Fur Trade in Utah," *Utah History Encyclopedia*. Edited by Allan Kent Powell. 1994. Online at:
<http://www.media.utah.edu/UHE/f/FURTRADE.html>

Ewers, John C. "The Horse in Blackfoot Indian Culture: With Comparative Material from Other Western Tribes." *Smithsonian Institution Bureau of American Ethnology Bulletin* 159 (1955; repr. Washington, D.C.: Smithsonian Institution, 1969).

- Fabian, Ann. *Card Sharps, Dream Books, and Bucket Shops: Gambling in Nineteenth-Century America*. Ithaca, N.Y.: Cornell University Press, 1990.
- Farmer, Jared. *On Zion's Mount: Mormons, Indians, and the American Landscape*. Cambridge, Mass.: Harvard University Press, 2008.
- Fell, James E. *Ores to Metals: The Rocky Mountain Smelting Industry*. Lincoln: University of Nebraska Press, 1979.
- Fiege, Mark. *Irrigated Eden: The Making of An Agricultural Landscape in the American West*. Seattle: University of Washington Press, 1993.
- , "The Weedy West: Mobile Nature, Boundaries, and Common Space in the Montana Landscape." *Western Historical Quarterly* 36 (Spring, 2005): 22-47.
- Fitzgerald, Deborah Kay. *Every Farm a Factory: The Industrial Ideal in American Agriculture*. New Haven, Ct.: Yale University Press, 2003.
- Flores, Dan. "Bison Ecology and Bison Diplomacy: The Southern Plains from 1800 to 1850." *Journal of American History* 78 (September 1991): 465-485.
- Follansbee, Robert. "Surface Water Supply of the United States 1914, Part IX, Colorado River Basin." *USGS Water Supply Paper* 389, 1916.
- Fowler, Don D., and Catherine S. Fowler, eds. *Anthropology of the Numa: John Wesley Powell's Manuscripts on the Numic Peoples of Western North America 1868-1880*. Washington, DC: Smithsonian Institution Press, 1971.
- Fowler, Loretta. *Arapaho Politics, 1851-1978*. Lincoln, NE: University of Nebraska Press, 1982.
- Frison, George, ed. *The Mill Iron Site*. Albuquerque, NM: University of New Mexico Press, 1996.
- Furniss, Malcolm M. *A History of Forest Entomology in the Intermountain and Rocky Mountain Areas, 1901-1982*. General Technical Report RMRS-GTR-195. Fort Collins, Colo.: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, 2007.
- Game Drives of Rocky Mountain National Park, The (Report No. 7)*. Ward, Colorado: Center for Mountain Archaeology Research, 1996.
- Geary, Michael M. *A Quick History of Grand Lake: Including Rocky Mountain National Park and the Grand Lake Lodge*. Ouray, CO: Western Reflections, 1999.

- Geist, Valerius. "Adaptive Behavioral Strategies." Pages 219-277 in Jack Ward Thomas and Dale E. Towell, comps. and eds. *Elk of North America: Ecology and Management*. Harrisburg, Pa.: Stackpole Books, 1982.
- Greene, Ann Norton. *Horses at Work: Harnessing Power in Industrial America*. Cambridge, MA: Harvard University Press, 2008.
- Goebel, T., M.R. Waters, and D.H. O'Rourke. "The Late Pleistocene Dispersal of Modern Humans in the Americas." *Science* 319 (2008): 1497-1502.
- Goetzmann, William H. "The Mountain Man as Jacksonian Man." *American Quarterly* 15 (1963): 402-15.
- Goss, James A. "Ute Language, Kin, Myth, and Nature: A Demonstration of a Multi-Dimensional Folk Taxonomy" *Anthropological Linguistics* 9 (Dec., 1967): 9.
- "Culture-Historical Inferences from Utaztekan Linguistic Evidence." In *Utaztekan Prehistory*, edited by Earl H. Swanson, Occasional Papers of the Idaho State University Museum 22 (Pocatello: Idaho State University Museum, 1968).
- Gray, Avis, Ann Feucht and Ryan Gray. "Patience Cairns Kemp" from *In Their Own Spirit: Oral History as they Remember It*. Privately Published, 2002.
- Grayson, Donald K., and David J. Meltzer. "A Requiem for North American Overkill." *Journal of Archaeological Science* 30 (2003): 585-593.
- Greene, Jerome A. and Douglas D. Scott. *Finding Sand Creek: History, Archaeology, and the 1864 Massacre Site*. Norman: University of Oklahoma Press, 2004.
- Gubbins, John Jr. and Katie McKalip. Mining in the Kawuneeche Valley (tentative title of unpublished manuscript), 2002. Manuscript on file, Rocky Mountain National Park.
- Hämäläinen, Pekka. *The Comanche Empire*. New Haven, CT: Yale University Press, 2008.
- "The Politics of Grass: European Expansion, Ecological Change, and Indigenous Power in the Southwest Borderlands." *The William and Mary Quarterly* 67 (April 2010): 173-208.
- "The Rise and Fall of Plains Indian Horse Cultures." *Journal of American History* 90 (2003): 833-862.
- Hansen, James E. *The Water Supply and Storage Company: A Century of Colorado Reclamation, 1891-1991*. Fort Collins, CO: Water Supply and Storage Company, 1991.
- Harper, Rob. "Looking the Other Way: The Gnadenuhtten Massacre and the Contextual Interpretation of Violence." *William and Mary Quarterly* 64 (July, 2007): 621-44.

- Harkin, Michael E., and David Rich Lewis, eds. *Native Americans and the Environment: Perspectives on the Ecological Indian*. Lincoln: University of Nebraska Press, 1999.
- Harvey, James. "'Squeaky' Bob Wheeler's Hunting and Ranching Life." *Colorado Magazine* 24, no. 4 (1947): 145-158.
- Hays, Samuel P. *The American People and the National Forests: The First Century of the U.S. Forest Service*. Pittsburgh: University of Pittsburgh Press, 2009.
- *Conservation and the Gospel of Efficiency: The Progressive Conservation Movement, 1890-1920* (Cambridge, Mass.: Harvard University Press, 1959).
- Hess, Karl, Jr. *Rocky Times in Rocky Mountain National Park*. Niwot: University Press of Colorado, 1993.
- Hoig, Stan. *The Sand Creek Massacre*. Norman: University of Oklahoma Press, 1961.
- Holliday, Vance T. "The Evolution of Paleoindian Geochronology and Typology on the Great Plains." *Geoarchaeology* 15 (2000): 227-290.
- Horsman, Reginald. *Race and Manifest Destiny: The Origins of American Racial Anglo-Saxonism*. Cambridge, Mass.: Harvard University Press, 1981.
- Hundley, Norris, Jr. *The Great Thirst: Californians and Their Water, 1770s-1990s*. Berkeley and Los Angeles: University of California Press, 1992.
- Igler, David. *Industrial Cowboys: Miller & Lux and the Transformation of the Far West, 1850-1920*. Berkeley: University of California Press, 2001.
- Immerman, Richard H. *An Empire for Liberty: A History of American Imperialism from Benjamin Franklin to Paul Wolfowitz*. Princeton, N.J.: Princeton University Press, 2010.
- "Indians in the Land: A Conversation between William Cronon and Richard White." *American Heritage*. August/September, 1986.
http://www.americanheritage.com/articles/magazine/ah/1986/5/1986_5_18.shtml.
 (accessed December 1, 2010).
- Isenberg, Andrew. *The Destruction of the Bison*. New York: Cambridge University Press, 2000.
- *Mining California: An Ecological History*. New York: Hill & Wang, 2005.
- Jackson, W. Turrentine. "British Interests in the Range Cattle Industry," in *When Grass Was King: Contributions to the Western Range Cattle Industry Study*. Boulder: University of Colorado Press, 1956.

- Jacoby, Karl. *Crimes Against Nature: Squatters, Poachers, Thieves, and the Hidden History of American Conservation*. Berkeley and Los Angeles: University of California Press, 2001.
- John, Elizabeth. *Storms Brewed in Other Men's Worlds: The Confrontations of Indians, Spanish, and French in the Southwest, 1540-1795*. College Station: Texas A&M Press, 1975.
- Jones, David S. "Virgin Soils Revisited." *William and Mary Quarterly* 60 (2003): 703-740.
- Jones-Eddy, Julie, ed. *Homesteading Women: An Oral History of Colorado, 1890-1950*. New York: Twayne, 1992).
- Kaestle, Frederika A., and David Glenn Smith. "Ancient Mitochondrial DNA Evidence for Prehistoric Population Movement: The Numic Expansion." *American Journal of Physical Anthropology* 115 (2001): 1-12.
- Kaufmann, Merrill R., Gregory H. Aplet, Mike Babler, William L. Baker, Barbara Bentz, Michael Harrington, Brad C. Hawkes, Laurie Stroh Huckaby, Michael J. Jenkins, Daniel M. Kashian, Robert E. Keane, Dominik Kulakowski, Charles McHugh, Jose Negron, John Popp, William H. Romme, Tania Schoennagel, Wayne Shepperd, Frederick W. Smith, Elaine Kennedy Sutherland, Daniel Tinker, and Thomas T. Veblen. *The Status of Our Scientific Understanding of Lodgepole Pine and Mountain Pine Beetles: A Focus on Forest Ecology and Fire Behavior*. GFI Technical Report 2008-2 (Arlington, Va.: The Nature Conservancy, 2008.
- Kay, Charles E. "Aboriginal Overkill and the Biogeography of Moose in Western North America." *ALCES* 33(1997): 141-164.
- Kaye, Glenn. "Lulu City: Colorado River Trail." *Estes Park, CO: Rocky Mountain Nature Association*, 1983.
- Kelly, Robert. *Gold vs. Grain: The Mining Debris Controversy*. Glendale, Cal.: Arthur H. Clark Co., 1959.
- Kelly, Robert L., and Mary M. Prasciunas. "Did the Ancestors of Native Americans Cause Animal Extinctions in Late-Pleistocene North America? And Does It Matter if They Did?." In *Native Americans and the Environment: Perspectives on the Ecological Indian*, edited by Michael E. Harkin and David Rich Lewis, 95-122. Lincoln: University of Nebraska Press, 2007.
- Kingsbury, Joseph L. "The Pike's Peak Rush, 1859." *Colorado Magazine* 4 (Jan. 1927).
- Knight, Oliver. "Correcting Nature's Error: The Colorado-Big Thompson Project." *Agricultural History* 30 (1956): 157-169.

- Krech, Shepherd, III. *The Ecological Indian: Myth and History*. New York: Norton, 1999.
- Krech, Shepherd, III, ed. *Indians, Animals, and the Fur Trade: A Critique of Keepers of the Game*. Athens, Ga.: University of Georgia Press, 1981.
- Laiolo, Paolo. "The Emerging Significance of Bioacoustics in Animal Species Conservation." *Biological Conservation* 143 (July, 2010), 1635-45.
- Lamb, S. M. "Linguistic Prehistory in the Great Basin," *International Journal of American Linguistics* 24 (1958): 95-100.
- Langston, Nancy. *Forest Dreams, Forest Nightmares: The Paradox of Old Growth in the Inland West*. Seattle: University of Washington Press, 1995.
- Lankford, George E. *Reachable Stars: Patterns in the Ethnoastronomy of Eastern North America*. Tuscaloosa, Ala.: University of Alabama Press, 2007.
- La Rue, E. C. "Colorado River and its Utilization." *U.S. Geological Survey, Water-Supply Paper* 395, 1916.
- Lears, T.J. Jackson. *Something for Nothing: Luck in America*. New York: Viking, 1993.
- LeCain, Timothy J. *Mass Destruction: The Men and Giant Mines Who Wired America and Scarred the Planet*. New Brunswick, N.J.: Rutgers University Press, 2009.
- Lecompte, Janet. *Pueblo, Hardscrabble, Greenhorn: Society on the High Plains, 1832-1856*. Norman: University of Oklahoma Press, 1978.
- Leonard, Stephen J. and Thomas J. Noel. *Denver: From Mining Camp to Metropolis*. Niwot: University of Colorado Press, 1990.
- Lewis, David Rich. *Neither Wolf Nor Dog: American Indians, Environment, and Agrarian Change*. Lincoln: University of Nebraska Press, 1994.
- Limerick, Patricia Nelson. *The Legacy of Conquest: the Unbroken Past of the American West*. New York: W.W. Norton, 1987.
- Lönnerberg, Allan. "The Digger Indian Stereotype in California." *Journal of California and Great Basin Anthropology* 3 (1981): 215-223
- Mark, Stephen R. *Domain of the Cavemen: A Historic Resource Study of Oregon Caves National Monument*. Oakland, Cal.: National Park Service Pacific West Region, 2006.
- Martin, Calvin. *Keepers of the Game: Indian-Animal Relationships and the Fur Trade*. Berkeley and Los Angeles: University of California Press, 1978.

- Mast, M. Alisa. *Assessment of Historical Water-Quality Data for National Parks in the Rocky Mountain Network, Colorado and Montana, through 2004*. U.S.G.S. Scientific Investigations Report 2007-5147. Reston, Va.: U.S.G.S., 2007.
- McBeth, Sally. *Native American Oral History and Cultural Interpretation in Rocky Mountain National Park*. Estes Park, Colo.: U.S. Department of the Interior, National Park Service, Rocky Mountain National Park, (2007). Online at http://www.nps.gov/history/history/online_books/romo/oral_history.pdf.
- McCarthy, G. Michael. *Hour of Trial: The Conservation Conflict in Colorado and the West, 1891-1907*. Norman: University of Oklahoma Press, 1977.
- McKnight, Patrick. "The Water Rights of Rocky Mountain National Park: A History." Typescript. N.p.: n.p., 1983.
- McQueary, Lela. *Widening Trails: Narratives of Pioneer Days in Middle Park on the Western Slope of Colorado's Rocky Mountains*. Denver: World Press, 1962.
- Means, Kathleen. "The Holzwarth Family: Holzwarth Trout Lodge, Holzwarth Ranch, Neversummer Ranch, 1917-1974." Estes Park, Colo.: Rocky Mountain National Park, 2001.
- Merbs, Charles F. "Patterns of Health and Sickness in the Precontact Southwest. In *Columbian Consequences*. Vol. 1 of *Archaeological and Historical Perspectives on the Spanish Borderlands West*. Edited by David Hurst Thomas. Washington: Smithsonian Institution Press, 1989
- Merk, Frederick. *Manifest Destiny and Mission in American History: A Reinterpretation*. New York: Knopf, 1963.
- Merrill, James H. *The Indians' New World: Catawbas and Their Neighbors from European Contact through the Era of Removal*. New York: Norton, 1991.
- Merrill, Karen. *Public Lands and Political Meaning: Ranchers, the Government, and the Property Between Them*. Berkeley, CA: University of California Press, 2002.
- Miller, Jean. "Buckskin and Berries, Tipis and Tomahawks." *Grand County Historical Association Journal* special edition, "Middle Park Indians to 1881," vol. 7, no. 1 (June 1987): 13-35.
- Miller, Wick R. "Uto-Aztecan Languages." In *Great Basin*. Edited by Warren L. D'Azevedo. Vol 11 in *Handbook of North American Indians*. Washington, DC: Smithsonian Institution, 1986.
- Mohn, Lynn. "Raising Pansies, Radishes, and Hell." *National Parks and Conservation Magazine* 49 (June 1975): 10-14.

- Monnett, John H. *The Battle of Beecher Island and the Indian War of 1867-1869*. Boulder: University Press of Colorado, 1992.
- *Tell Them We Are Going Home: The Odyssey of the Northern Cheyennes*. Norman: University of Oklahoma Press, 2001.
- Mote, James D. "Holzwarth Homestead, Historic Structure Report and Historic Furnishing Study, Rocky Mountain National Park, Colorado." *Department of the Interior, National Park Service*, 1982.
- Müller-Schwartz, Dietland. *The Beaver: Its Life and Impact*. 2nd ed. Ithaca, N.Y.: Comstock Publishing Associates of Cornell University Press, 2011.
- Musselman, Lloyd K. *Rocky Mountain National Park: Administrative History, 1915-1965*. Washington D.C.: U.S. Office of History and Historic Architecture, Eastern Service Center, 1971.
- Nabokov, Peter and Lawrence L. Loendorf. *Restoring a Presence: American Indians and Yellowstone National Park*. Norman: University of Oklahoma Press, 2004.
- Nelson, Jack R. "Relationships of Elk and Other Large Herbivores. Pages 415-441 in Jack Ward Thomas and Dale E. Toweill, comps. and eds., *Elk of North America: Ecology and Management*. Harrisburg, Pa.: Stackpole Books, 1982.
- Nikiforuk, Andrew. *Empire of the Beetle: How Human Folly and a Tiny Bug Are Killing North America's Great Forests*. Vancouver, B.C.: Greystone Books, 2011.
- Nugent, Walter. *Into the West: The Story of Its People*. New York City: Vintage Books, a Division of Random House, Inc., 1999.
- Opler, Marvin K. "The Southern Utes of Colorado." In *Acculturation in Seven American Indian Tribes*. Ralph Linton, ed. New York: Appleton Century, 1940.
- Paul, Rodman Wilson and Elliott West. *Mining Frontiers of the Far West, 1848-1880*. Albuquerque, NM: University of New Mexico Press, 2001.
- Pauly, Nell Donathan. *Ghosts of the Shootin'*. Grand Lake, Colo.: Kaufman Press, 1961.
- Pearce, William Martin. *The Matador Land and Cattle Company*. Norman, OK: University of Oklahoma Press, 1964.
- Peek, James R., Richard J. Pedersen, and Jack Ward Thomas. "The Future of Elk and Elk Hunting." Pages 599-625 in Jack Ward Thomas and Dale Toweill, comps. and eds. *Elk in North America: Ecology and Management*. Harrisburg, Pa.: Stackpole Books, 1982.

- Perry, Phyllis J. *It Happened in Rocky Mountain National Park*. Guilford, CT: Morris Book Publishing, LLC, 2008.
- Pickering, James H. *America's Switzerland: Estes Park and Rocky Mountain National Park, the Growth Years*. Boulder, CO: University Press of Colorado, 2005.
- Pisani, Donald J. *From the Family Farm to Agribusiness: The Irrigation Crusade in California and the West, 1850-1931*. Berkeley: University of California Press, 1984.
- Pitblado, Bonnie L. "Angostura, Jimmy Allen, Foothills-Mountain: Clarifying Terminology for Late Paleoindian Southern Rocky Mountain Spear Points," Pages 311-337 in Robert H. Brunswig and Bonnie L. Pitblado, eds. *Frontiers in Colorado Paleoindian Archaeology: From the Dent Site to the Rocky Mountains*. Boulder: University Press of Colorado, 2007.
- Pitblado, Bonnie L. and Robert H. Brunswig. "That Was Then, This is Now: Seventy-Five Years of Paleoindian Research in Colorado." Pages 39-84 in Robert H. Brunswig and Bonnie L. Pitblado, eds. *Frontiers in Colorado Paleoindian Archaeology: From the Dent Site to the Rocky Mountains*. Boulder: University Press of Colorado, 2007.
- Pomeroy, Earl. *In Search of the Golden West: The Tourist in Western America*. Lincoln: University of Nebraska Press, 1957.
- Pyne, Stephen J. *Fire in America: A Cultural History of Wildland and Rural Fire*. Seattle: University of Washington Press, 1997.
- Reed, Alan D. "Ute Cultural Chronology." In *Archaeology of the Eastern Ute: A Symposium, Colorado Council of Professional Archaeologists Occasional Papers No. 1*. Ed. Paul R. Nickens. [Denver]: Colorado Council of Professional Archaeologists, 1988.
- Reed, Alan D. and Michael D. Metcalf. *Colorado Prehistory: A context for the Northern Colorado River Basin*. Denver: Colorado Council of Professional Archaeologists, 1999.
- Reisner, Marc P. *Cadillac Desert: The American West and Its Disappearing Water*. New York: Viking, 1986.
- Righter, Robert W. *The Battle over Hetch-Hetchy: America's Most Controversial Dam and the Birth of Modern Environmentalism*. New York: Oxford University Press, 2006.
- Ripple, William J. and Blaire Van Valkenburgh. "Linking Top-down Forces to the Pleistocene Megafaunal Extinctions," *BioScience* 60 (July 2010).
- Rhode, David, and David B. Madsen. "Where Are We?." In *Across the West: Human Population Movement and the Expansion of the Numa*, edited by David B. Madsen and David Rhode, 213-222. Salt Lake City: University of Utah Press, 1994.

- Robbins, Russell L., Don E. Redfeare, and Charles P. Stone. "Refuges and Elk Management." Pages 479-507 in Jack Ward Thomas and Dale Toweill, comps. and eds. *Elk in North America: Ecology and Management*. Harrisburg, Pa.: Stackpole Books, 1982.
- Robbins, William. "In Pursuit of Historical Explanation: Capitalism as a Conceptual Tool for Knowing the American West." *The Western Historical Quarterly* 30, no. 3 (Autumn, 1999): 277-293.
- Rogers, James Grafton. *The Rush to the Rockies: Background to Colorado History*. Denver: Colorado Historical Society, 1957.
- Rohe, Randall. "Man and the Land: Mining's Impact in the Far West." *Arizona and the West* 28 (Winter 1986): 299-338.
- Rothman, Hal K. "'A Regular Ding-Dong Fight': Agency Culture and Evolution in the NPS-USFS Dispute, 1916-1937." *Western Historical Quarterly* 20 (Summer, 1989): 141-161.
- *On Rims and Ridges: The Los Alamos Area since 1880*. Paperback ed. 1992; Lincoln: University of Nebraska Press, 1997.
- Rockwell, Wilson. *The Utes: A Forgotten People*. Lake City, Colo.: Western Reflections Publishing Co., 1998.
- Roe, Frank. *The North American Buffalo: A Critical Study of the Species in Its Native State*. Toronto: University of Toronto Press, 1951.
- Rosenlund, Bruce D., Chris Kennedy and K. Czarnowski. *Fisheries and Aquatic Management: Rocky Mountain National Park*. Lakewood and Estes Park, Colo.: U.S. Department of the Interior, Fish and Wildlife Service, Colorado Fish and Wildlife Assistant Office, and National Park Service, Rocky Mountain National Park, 2001.
- Runte, Alfred. *National Parks: The American Experience*. 4th ed. Lanham, Md.: Taylor Trade Publishing, 2010.
- *Trains of Discovery: Railroads and the Legacy of Our National Parks*. Lanham, Md.: Roberts Rinehart, 2011.
- Russell III, Edmund P. *War and Nature: Fighting Humans and Insects with Chemicals from World War I to Silent Spring*. New York: Cambridge University Press, 2001.
- Salisbury, Neal. "The Indians' Old World: Native Americans and the Coming of Europeans," *William & Mary Quarterly* 53 (1996): 435-458.
- Scharff, Virginia. *Taking the Wheel: Women and the Coming of the Motor Age*. New York: Free Press, 1991.

- Schmitt, Peter J. *Back to Nature: The Arcadian Myth in Urban America*. New York: Oxford University Press, 1969.
- Scott, Douglas D. "Conical Timbered Lodges in Colorado or Wickiups in the Woods." In *Archaeology of the Eastern Ute: A Symposium, Colorado Council of Professional Archaeologists Occasional Papers No. 1*, edited by Paul R. Nickens, 45-53. n.p.: Colorado Council of Professional Archaeologists, 1988.
- Scott, Eric. "Extinctions, scenarios, and assumptions: Changes in latest Pleistocene large herbivore abundance and distribution in western North America." *Quaternary International* 217 (April 15, 2010): 225-239.
- Scott, James. *Seeing Like a State: How Certain Schemes to Improve the Human Condition Have Failed*. New Haven, CT: Yale University Press, 1998.
- Secrest, Clark. "Squeaky Bob Wheeler's Place: Way Station in the Rockies," *Colorado Heritage*, Summer (2000): 20-23
- Sellars, Richard. *Preserving Nature in the National Parks: A History*. New Haven, Ct.: Yale University Press, 1997.
- Shemkin, Demitri B. "The Introduction of the Horse." In *Handbook of North American Indians*, vol. 11, *Great Basin*, edited by Warren L. D'Azevedo, 517-524. Washington, DC: Smithsonian Institution, 1986.
- Simmons, Virginia McConnell. *The Ute Indians of Utah, Colorado, and New Mexico*. Boulder: University Press of Colorado, 2000.
- Slotkin, Richard. *Regeneration through Violence: The Mythology of the American Frontier*. Middletown, Ct.: Wesleyan University Press, 1973.
- Smiley, Jerome C. *History of Denver, with Outlines of the Earlier History of the Rocky Mountain Country*. Denver: J. H. Williamson and Co., 1903.
- Smith, Anne M. *Ethnography of the Northern Utes (Papers in Anthropology No. 17)*. Santa Fe, NM: Museum of New Mexico Press, 1974.
- Smith, Duane A. *Mining America: The Industry and the Environment, 1800-1980*. Boulder: University Press of Colorado, 1994.
- "Mother Lode for the West: California Mining Men and Methods." In James J. Rawls and Richard Orsi, eds. *A Golden State: Mining and Economic Development in Gold Rush California*. Pages 149-173. Berkeley and Los Angeles: University of California Press, 1999.

- Smith, Henry Nash. *Virgin Land: The American West as Symbol and Myth*. Cambridge, Mass.: Harvard University Press, 1950.
- Spence, Mark David. *Dispossessing the Wilderness: Indian Removal and the Making of the National Parks*. New York: Oxford University Press, 1997.
- Sprague, Marshall. *Massacre: The Tragedy at White River*. 1957; repr. Lincoln and London: University of Nebraska Press, 1980.
- Steinberg, Theodore. *Down to Earth: Nature's Role in American History*. 2nd ed. New York: Oxford University Press, 2009.
- Steinel, Alvin T. *History of Agriculture in Colorado: A Chronological Record of Progress in the Development of General Farming, Livestock Production and Agricultural Education and Investigation, on the Western Border of the Great Plains and in the Mountains of Colorado, 1858 to 1926*. Fort Collins: State Agricultural College for the State Board of Agriculture, 1926.
- Stephanson, Anders. *Manifest Destiny: American Expansionism and the Empire of Right* (New York: Hill & Wang, 1995).
- Steward, Julian H. "A Uintah Ute Bear Dance, March, 1931." *American Anthropologist* 34 (Apr. - Jun., 1932): 263-273.
- , *Ute Indians I: Aboriginal and Historical Groups of the Ute Indians of Utah: An Analysis with Supplement*. New York: Garland, 1974.
- Stiger, Mark. *Hunter-Gatherer Archaeology of the Colorado High Country*. Boulder: University Press of Colorado, 2001.
- Stotts, Jane. "Footprints on a Mountain Landscape: Tracking the History of 160 acres in the Kawuneeche Valley of Rocky Mountain National Park." Estes Park, Colo.: Rocky Mountain Nature Association, 2005.
- Sutter, Paul S. *Driven Wild: How the Fight Against Automobiles Launched the Modern Wilderness Movement*. Seattle: University of Washington Press, 2002.
- Taber, Richard T. Kennedth Raedeke, and Donald A. McCaughran. "Population Characteristics." Pages 279-298 in Jack Ward Thomas and Dale E. Toweill, comps. and eds., *Elk of North America: Ecology and Management*. Harrisburg, Pa.: Stackpole Books, 1982.
- Taylor, Alan. "'Wasty Ways': Stories of American Settlement." *Environmental History* 3 (1998): 291-310

- Thomas, Alfred Barnaby. "Spanish Expeditions into Colorado." *Colorado Magazine* 1 (Nov., 1924): 289-300.
- Thomas, Jack Ward and Dale E. Toweill, compilers and editors. *Elk of North America: Ecology and Management*. Harrisburg, Pa.: Stackpole Books, 1982.
- Thornton, Russell. *American Indian Holocaust and Survival: A Population History since 1492*. Norman: University of Oklahoma Press, 1987.
- Torrey, E. Fuller and Robert H. Yolken. *Beasts of the Earth: Animals, Humans, and Disease*. New Brunswick, N.J.: Rutgers University Press, 2005.
- Trachtenberg, Alan. *The Incorporation of America: Culture and Society in the Gilded Age*. New York: Hill & Wang, 1982.
- "Traditional Cosmology, Ecology and Language of the Ute Indians: From an Interview with James A. Goss." In *Ute Indian Arts & Culture: From Prehistory to the New Millennium*, edited by William Wroth, 27-52. Colorado Springs, CO: Colorado Springs Fine Arts Center, 2000.
- Turk, Lorraine. "Who Was ... Judge Joseph Wescott." Grand Lake County Historical Society, <http://www.kauffmanhouse.org/People/Wescott.html>.
- Tyler, S. Lyman. "The Yuta Indians before 1680." *Western Humanities Review* 5 (Spring 1951): 153-163.
- United States Department of the Interior, National Park Service. *National Park Service Administrative History: A Guide*. Washington, D.C.: G. P. O., 2004.
- Van Kirk, Sylvia. *Many Tender Ties: Women in Fur-Trade Society, 1670-1870*. 1980; repr., Norman: University of Oklahoma Press, 1983.
- Veblen, Thomas T. and D. C. Lorenz. "Anthropogenic Disturbance and Recovery Patterns in Montane Forests" *Physical Geography* 7 (1986): 1-24.
- , *The Colorado Front Range: A Century of Ecological Change*. Salt Lake City, UT: University of Utah Press, 1991.
- Wagner, Frederick H., Ronald Foresta, R. Bruce Gill, Dale R. McCullough, Michael R. Pelton, William F. Porter, and Hal Salwasser. *Wildlife Policies in the U. S. National Parks*. Washington, D.C.: Island Press, 1995.
- Walsh, Richard G. and John P. Olienyk. "Recreation Demand Effects of Mountain Pine Beetle Damage to the Quality of Forest Recreation Resources in the Colorado Front Range." Preliminary draft. Fort Collins, Colo.: Department of Economics, Colorado State University, June, 1981.

- Warren, Louis S. *The Hunter's Game: Poachers and Conservationists in Twentieth-Century America*. New Haven, Ct.: Yale University Press, 1997.
- Waters, Michael R., Steven L. Forman, Thomas A. Jennings, Lee C. Nordt, Steven G. Driese, Joshua M. Feinberg, Joshua L. Keene, Jessi Halligan, Anna Lindquist, James Pierson, Charles T. Hallmark, Michael B. Collins, and James E. Wiederhold. "The Buttermilk Creek Complex and the Origins of Clovis at the Debra L. Friedkin Site, Texas." *Science* 331 (March 25, 2011): 1599-1603.
- Way, Peter. *Common Labour: Workers and the Digging of North American Canals, 1780-1860*. New York: Cambridge University Press, 1993.
- Webb, Walter Prescott. *The Great Plains*. Lincoln, NE: University of Nebraska Press, 1981.
- Weber, David J. *The Spanish Frontier in North America*. New Haven, Ct.: Yale University Press, 1992.
- . *The Taos Trappers: The Fur Trade in the Southwest, 1540-1846*. Norman: University of Oklahoma Press, 1971.
- Weir, Jim. "Dude and Guest Ranches in Grand County: Who, What, When, and Where," *Grand County Historical Association Journal* 6 (June 1986): 3-31.
- West, Elliott. *The Contested Plains: Indians, Goldseekers, & the Rush to Colorado*. Lawrence, KS: University Press of Kansas, 1998.
- . *The Way to the West: Essays on the Central Plains*. Albuquerque, NM: University of New Mexico Press, 1995.
- Wellock, Thomas R. *Preserving the Nation: The Conservation and Environmental Movements*. Wheeling, Ill.: Harlan-Davidson, 2007.
- White, Richard. "Are You an Environmentalist or Do You Work for a Living?: Work and Nature," in William Cronon, ed., *Uncommon Ground: Rethinking the Human Place in Nature* (New York: Norton, 1995): 171-85.
- . *The Middle Ground: Indians, Empires, and Republics in the Great Lakes Region, 1650-1815*. New York: Cambridge University Press, 1991.
- . *Railroaded: The Transcontinentals and the Making of Modern America*. New York: Oxford, 2011.
- Wiebe, Robert. *The Search for Order, 1877-1920*. New York: Hill & Wang, 1967.

- Wilkinson, Charles F. *Fire on the Plateau: Conflict and Endurance in the American Southwest*. Washington, D.C.: Island Press, 1999.
- Williamson, Ray A. *Living the Sky: The Cosmos of the American Indian*. Boston: Houghton Mifflin, 1984.
- Williamson, Ray A. and Claire R. Farrer, eds. *Earth and Sky: Visions of the Cosmos in Native American Folklore*. Albuquerque, N.M.: University of New Mexico Press, 1992.
- Wishart, David J. *The Fur Trade of the American West: A Geographic Synthesis 1807-1840*. Lincoln: University of Nebraska Press, 1979.
- Workers of the Writers Program of the Works Progress Administration of the State of New Mexico. *New Mexico: The Colorful State*. New York: Hastings House, 1940.
- Worster, Donald. *Dust Bowl: The Southern Plains in the 1930s*. New York: Oxford University Press, 1979.
- *Nature's Economy: A History of Ecological Ideas*. New York: Cambridge University Press, 1985.
- "New West, True West: Interpreting the Region's History." *The Western Historical Quarterly* 18 (April 1987): 141-156.
- *A Passion for Nature: The Life of John Muir*. New York: Oxford University Press, 2008.
- *Rivers of Empire: Water, Aridity, and the Growth of the American West*. New York: Pantheon, 1986.
- *The Wealth of Nature: Environmental History and the Ecological Imagination*. New York: Oxford University Press, 1994.
- Wrobel, David M. *Promised Lands: Promotion, Memory, and the Creation of the American West*. Lawrence: University Press of Kansas, 2002.
- Wycoff, William and Katherine Hansen. "Livestock Grazing and Environmental Change in Southwest Montana, 1860-1990." *Environmental History Review* 15(Winter 1991): 45-71.
- Young, Richard K. *The Ute Indians of Colorado in the Twentieth Century*. Norman: University of Oklahoma Press, 1997.
- Yule, Jeffrey V., Christopher X.J. Jensen, Aby Joseph, and Jimmie Goode. "The Puzzle of North America's Late Pleistocene Megafaunal Extinction Patterns: Test of New Explanation Yields Unexpected Results." *Ecological Modelling* 220 (2009): 533-544.

Zippay, Andrea. "Feeding Beef Cows during Winter Months Can Tear Up Farm Budget Book." *Farm and Dairy* [Aug. 8, 2002]. Online at: <http://www.farmanddairy.com/news/feeding-beef-cows-hay-during-winter-months-can-tear-up-farm-budget-book/748.html>

Theses and Dissertations

Arnold, Margaret M. "Ute Trade, 1750-1821: At the Core of Economic, Political, and Cultural Change." M.A. thesis, University of Wyoming, 1995.

Biggins, James. "Historical Geography of the Georgetown, Colorado Silver Mining Area," Ph.D. diss., University of Colorado, 1972.

Bradt, Russell N. "Foreign Water in the Cache La Poudre Valley." Master's thesis, Colorado State College of Education, 1948.

Cassells, E. Steve. "Hunting the Open High Country." Ph.D. diss., University of Wisconsin-Madison, 1995.

Diskin, Matthew. "Forest Regeneration Trajectories in Mountain Pine Beetle-Disturbed Forests of Rocky Mountain National Park." Master's thesis, Colorado State University, 2010.

Francis, Kevin James. "Death Enveloped All Nature in a Shroud: The Extinction of Pleistocene Mammals and the Persistence of Scientific Generalists." Ph.D. diss., University of Minnesota, 2002.

Frank, Jerritt James. "Marketing the Mountains: An Environmental History of Tourism in Rocky Mountain National Park." Ph.D. diss., University of Kansas, 2008.

Hickey, Jeffrey S. "An Uneasy Coexistence: Rocky Mountain National Park and the Grand Ditch." M.A. thesis, University of Colorado at Boulder, 1988.

Kissler, Betty Jane. "A History of the Water Supply and Storage Company." Master's thesis, Colorado State College of Education, 1952.

Larkins, Kenneth F. "Patterns of Elk Movement and Distribution in and Adjacent to the Eastern Boundary of Rocky Mountain National Park." Master's Thesis, University of Northern Colorado, Greeley, 1997.

Nelson, Kellen N. "The Effect of Mountain Pine Beetle Caused Mortality on Subalpine Forest Stand and Landscape Structure in Rocky Mountain National Park, CO." Master's thesis, Colorado State University, 2009.

Philpott, William P. "Consuming Colorado: Landscapes, Leisure, and the Tourist Way of Life." Ph.D. diss., University of Wisconsin-Madison, 2002.

Ryan, Sandra. "Effects of Transbasin Diversion on Flow Regime, Bedload Transport, and Channel Morphology in Colorado Mountain Streams." Ph.D. diss., University of Colorado at Boulder, 1994.

Sibold, Jason S. "Multi-Scale Subalpine Forest Dynamics, Rocky Mountain National Park, Colorado." Ph.D. diss., University of Colorado at Boulder, 2005.

Woods, Scott W. "Ecohydrology of Subalpine Wetlands in the Kawuneeche Valley, Rocky Mountain National Park, Colorado." Ph.D. diss., Colorado State University, 2001.

Appendix 1: On “Numic Spread”

By the conclusion of the 1860s, Americans coming into the Great Basin and Rocky Mountains began to puzzle over a peculiar finding. The Utes and a wide range of other Indian peoples who inhabited a vast country stretching between the southern plains of Texas to the greater Yellowstone area, and from the Mississippi Valley to Death Valley, spoke closely-related languages. This “discovery” attracted considerable scholarly attention, ultimately shaping understandings—and misunderstandings—of Nuche origins and history that remain powerful down to the present day.

The Overland Trail/Union Pacific-Central Pacific route through Wyoming constituted the main corridor by which ethnographers, natural scientists, and others interested in explaining the great puzzle of Native American origins and dispersion came to know the Utes and those speaking similar languages. Because early ethnographic researchers tended to encounter the Shoshones who lived along the central stretch of this route first, they first applied the name “Shoshonean” to all of the languages spoken by the aboriginal inhabitants of all of Nevada and Utah, most of central and western Colorado and Wyoming, and parts of eastern California, northern New Mexico, southeastern Oregon, and northwestern California. “The Shoshone and the Utah are the principal languages of the great interior basin,” historian Hubert Howe Bancroft noted in an influential passage of his 1875 *Native Races of the Pacific States of North America*, “and these may be regarded as sisters of a common mother language, the Shoshone preponderating.” John Wesley Powell and other authorities subsequently used Bancroft’s nomenclature, even though Powell had generally preferred “Nu-ma” to “Shoshone” in his early reports of his ethnographic research in the Great Basin. By the twentieth century, “Numic”—

after the Shoshone *Numa* and closely terms roughly synonymous with Nuche—replaced Shoshonean as the commonly accepted designation for the northernmost branch of Uto-Aztecan languages.¹

The strikingly close affinities between the various branches of Numic—anthropologist Wick Miller explains that “when words in Numic are similar, they are almost identical”—gave rise to what a number of scholars have termed “the Numic problem” in Great Basin anthropology: How to account for the broad geographic distribution and comparatively minor differences of language and culture that characterized the Utes and their apparent relatives in the intermountain West?² A large body of theory and research in the field of linguistics asserts that the comparatively minor distinctions between Ute and other Numic languages warrant two hypotheses about Nuche history: first, that the Utes and other Numic speakers possess common origins in a shared homeland or cultural hearth that must have initially been quite small; and second, that the Ute language diverged from other Numic tongues relatively recently, as various

¹ Hubert Howe Bancroft, *Myths and Languages*, vol. 3 in *The Native Races of the Pacific States of North America*, vol. III, (New York: D. Appleton and Company, 1875), 661. In the same year Bancroft’s *Native Races* was published, John Wesley Powell referred to the “Ute tribes of the Shoshonean family of Indians.” John Wesley Powell, *The Exploration of the Colorado River and Its Canyons*, introduction by Wallace Stegner (1875; New York: Penguin Books, 1987), 62. Wick R. Miller, “Uto-Aztecan Languages,” in *Handbook of North American Indians*, 113; Don D. Fowler and Catherine S. Fowler, eds., *Anthropology of the Numa: John Wesley Powell’s Manuscripts on the Numic Peoples of Western North America 1868-1880* (Washington, DC: Smithsonian Institution Press, 1971), 8; John W. Powell, “Report on the Indians of the Numa Stock,” n.d., in *ibid.*, 37; John W. Powell, *Indian Linguistic Families of America, North of Mexico*, in *Seventh Annual Report of the Bureau of Ethnology to the Secretary of the Smithsonian Institution 1885-'86* (Washington: G.P.O., 1891), 109. The German linguist Johann Carl Eduard Buschmann first noted a relationship between various Mexican and Sonoran languages; only later, though, did scholars notice widespread similarities between these languages and those of the Shoshonean/Numic family.

² Miller, “Uto-Aztecan Languages,” 113. For a fuller discussion of studies attempting to classify these languages, see Miller, 117-119. For discussions of the “Numic problem,” see Robert L. Bettinger, “Cultural, Human, and Historical Ecology in the Great Basin: Fifty Years of Ideas about Ten Thousand Years of Prehistory,” in *Advances in Historical Ecology*, ed. William Balee (New York: Columbia University Press, 1998), 179-181 and David Rhode and David B. Madsen, “Where Are We?,” in *Across the West: Human Population Movement and the Expansion of the Numa*, ed. David B. Madsen and David Rhode (Salt Lake City: University of Utah Press, 1994), 213-222.

groups of Numic speakers spread outward from their ancestral homeland to occupy an immense territory across the Intermountain West and beyond without the various branches of the language diverging in substantial ways. For more than fifty years, scholars in a range of disciplines have accepted these general assertions while engaging in contentious debates about both the timing of this so-called “Numic spread,” and the location of the postulated Numic homeland from which the Utes and others likely dispersed. Though considerable uncertainty persists, most anthropologists seem content with an interpretation that locates the source region in the southeastern stretches of the Numic homelands, perhaps in the greater Death Valley region and dates the arrival of the Utes to what is now Colorado to a minimum (i.e. latest) date of 1000 C.E.—with their arrival in the central Rocky Mountains occurring even more recently.³

While most historians have been content to replicate this anthropological interpretation uncritically, it is worth noting that direct evidence of a “Numic spread” has remained elusive.⁴ Most theories of Shoshonean expansion ultimately rest upon an edifice of unproven assumptions and hypotheses that are almost impossible to test. The relatively minor differences between various Numic languages indeed suggest a relatively recent divergence between the family’s component tongues. Yet dating such divergence remains difficult. In a landmark 1958 study, Sidney M. Lamb employed a technique known as glottochronology to postulate that the Numic spread had begun from a cultural hearth in the southwestern Great Basin, perhaps in the Death

³ The most useful summary of these debates is Rhode and Madsen, “Where Are We?,” whose questioning title only begins to scratch the surface of the considerable uncertainty that has swirled around these questions.

⁴ For three recent and important examples, see Virginia McConnell Simmons, *The Ute Indians of Utah, Colorado, and New Mexico* (Niwot: University Press of Colorado, 2000); Ned Blackhawk, *Violence over the Land: Indians and Empires in the Early American West* (Cambridge, Mass.: Harvard University Press, 2006); Pekka Hämäläinen, *The Comanche Empire* (New Haven, Ct.: Yale University Press, 2008).

Valley Region.⁵ Lamb and subsequent linguists, however, relied primarily upon broad theories of language change and known examples of linguistic divergence. Most data on the character and rate of language change have derived from other cultural and environmental contexts (though some models of glottochronology have attempted to account for the well-documented split that occurred in the 1600s when some horse-mounted Shoshones embarked on an epic migration and became the mighty Comanche). For this and other reasons, considerable controversy continues to plague glottochronology, the primary technique by which linguists purport to estimate with some accuracy the rate at which related languages diverge from each other. Scholars who favor universalizing models of human behavior often find glottochronology compelling, particularly in the absence of contrary evidence; those who emphasize particularistic, contingent understandings of cultures and cultural change, by contrast, have subjected glottochronology to blistering attacks.⁶

To complicate matters further, some proponents of Numic spread have drawn overly simplistic connections between language, culture, and kinship. There remains no easy way to connect the three broad entities scholars are actually talking about when they talk about “Numic spread”: 1) systems of speech, which leave no discernible trace in the archaeological record; 2) the practices, social structures, cosmologies, and so forth by which Indian subjects have lived their lives, most of which leave behind few or no artifacts; and 3) native identities, which have historically involved a combination of genetic, cultural, political, and ecological relationships. Great Basin archaeologists still sometimes disagree over which artifacts were produced by which people; whether periods of rapid transition in the archaeological record reflect human migration

⁵ S. M. Lamb, “Linguistic Prehistory in the Great Basin,” *International Journal of American Linguistics* 24 (1958), 95-100.

⁶ For one critique, see Lyle Campbell, *Historical Linguistics: An Introduction* (Cambridge, Mass.: MIT Press, 1998), 177-186.

or the diffusion of new ideas, practices, and technologies; and what connections, if any, link the “cultures” discernible in archaeological evidence with historic occupants of the Basin and adjacent areas such as the Colorado Rockies. While scholars have spent many decades trying to solve the riddles of linguistic, technological, and biological change in this region, they have yet to uncover incontrovertible evidence that the Numic spread occurred at the postulated time; evidence firmly attributing any change in Numic languages to processes of migration and replacement remain equally elusive.⁷

In the end, it seems careless to follow anthropological conventions without at least acknowledging the shaky state of scholarly knowledge regarding the “pre”-history of the Utes and those who speak related languages. James Goss, a noted authority on Ute ethnography, initially supported Lamb’s conclusions regarding a Numic spread. After extensive field work with Ute peoples in Utah and Colorado, though, Goss changed his mind. His logic seems worth heeding; the burden of proof in determining the origins and timing of Native American inhabitation of a place should rest upon anthropologists, not Indians, Goss argued. Scholars, in other words, should accept the precedence of Ute origin stories unless clear scientific evidence contradicts cultural knowledge.⁸

Today, visitors to RMNP encounter confusing and contradictory information regarding the antiquity of Ute inhabitation. Until recent decades, the National Park Service, true to the heritage of Oliver Toll’s wayward campaign to recover and preserve the names Arapahos applied

⁷ Intriguingly, genetic research has recently provided some support to Lamb’s theory. See Frederika A. Kaestle and David Glenn Smith, “Ancient Mitochondrial DNA Evidence for Prehistoric Population Movement: The Numic Expansion,” *American Journal of Physical Anthropology* 115 (2001), 1-12. This research, however, has focused almost entirely on the Nevada/California region. Similar studies are needed of the Utes and prehistoric peoples of the Rocky Mountains.

⁸ “Traditional Cosmology, Ecology and Language of the Ute Indians: From an Interview with James A. Goss” in William Wroth, ed., *Ute Indian Arts & Culture: From Prehistory to the New Millennium* (Colorado Springs: Colorado Springs Fine Arts Center, 2000), 29-30.

to Ute homelands, virtually always portrayed the Utes as recent arrivals who occupied the park on a limited, almost accidental basis.⁹ The very chain of events that led the National Park Service change the name of the valley known to American settlers for several decades as the North Fork to the Kawuneeche constituted, after all, a dismissal of Ute claims to the region. The Arapahos, as a classic, horse-mounted plains people, presumably possessed both practical and ideological advantages when Oliver Toll and the Colorado Mountain Club sought to reclaim “Indian” names and trails for Anglo travelers and tourists. Moreover, by the early twentieth century, the Northern Ute groups most likely to have inhabited the Kawuneeche were suffering both from the destitution of the Uintah and Ouray Reservation, and from the pervasive derogation of Great Basin Indians as “diggers,” supposedly the most primitive and deprived of all American Indians.¹⁰ Only in the past fifteen years has the NPS begun to extend invitations to Ute peoples, most notably through anthropological research projects that have invited Ute elders back to RMNP. Sally McBeth and Bob Brunswig of the University of Northern Colorado and John Brett of the University of Colorado of Denver simultaneously hoped to gain insights into Nuche ideas of nature and land use practices, and to facilitate the reconnection of Ute peoples to their ancient homeland.¹¹ Interpretive signs within the park subsequently began to reflect a vastly different NPS line regarding the Utes; following a logic similar to that expressed by James Goss, some Park Service signs and interpretive materials now claim that the Ute presence in RMNP may extend back as many as six thousand years.

⁹ Clifford H. Duncan and James A. Goss, “Brief Report: Consultancy on Traditional Ute Sites in Rocky Mountain National Park (August 22, 23, and 24, 2000), in folder 2, series 2, Native American Oral History and Cultural Interpretation in Rocky Mountain National Park, RMNP Archives, p. 6.

¹⁰ On economic conditions on the Uintah and Ouray Reservation, see David Rich Lewis, *Neither Wolf Nor Dog: American Indians, Environment, and Agrarian Change* (Lincoln: University of Nebraska Press, 1994).

¹¹ Some of the results of these projects are cited in chapter 1 of this report.

Appendix 2: Homesteading Data, General Land Office Records

Name	Dates	Location	Nationality	Marital Status; Household Size	success?
Brooks, William	9/23/1907 - 11/11/1912	13 T4N 76W	United States	NA	n
Christiansen, Mark	10/16/1913 - 9/2/1920	13 T4N 76W	Denmark	Married; wife, son, daughter-in-law	y
Clark, Charles	8/23/1926 - 11/9/1926	2 T4N 76W	United States	NA	n/a
Crandall, Mary	1/29/1920 - 1/22/1921	11 T4N 76W	United States	Married; deserted by husband	n
Dewitt, Clinton	4/7/1919 - 1/2/1924; 6/27/1927 - 4/26/1933	24, 25 T4N 76W	US; Oklahoma	Single (Later married with daughter)	y
Dewitt, Edwin	6/29/1918 - 10/19/1923	25 T4N 76W	United States	Married; wife, two children	y
Fleshuts, Joseph	11/1/1902 - 7/29/1909	24, 25 T5N 76W	Germany	Single	y
Garlough, Edwin	7/9/1915 - 1/12/1920	11, 12 T4N 76W	United States	NA	n
Giggey, Leon	11/1/1889 - 12/20/1892	1, 2 T4N 76W	US; Illinois US;	Married; wife, three children	n/a
Hanscome, Alfred	3/29/1888 - 11/15/1894	35 T4N 76W	Massachus etts	Married; wife	y
Harbison, Annie	5/23/1895 - 12/30/1902	30, 31 T4N 75W	US; Kansas	Single	y
Harbison, Kate	5/24/1895 - 12/30/1902	30, 31 T4N 75W	US; Kansas	Single	y
Harbison, Mary	6/27/1908 - 2/8/1916	25 T4N 76W	Nova Scotia	Widowed	n
Harbison, Robert	6/27/1901 - 6/27/1908	25 T4N 76W	United States	NA	n
Hatter, Allen	2/28/1920 - 10/14/1925	11, 12 T4N 76W	US; Virginia	Single	y
Hedrick, John	4/11/1884 - 7/23/1889	11, 12 T4N 76W	US; Illinois	Married; wife, son, deceased daughter	y
Hertel, Charles	6/29/1888 - 2/11/1895	13 T4N 76W	US; Missouri	Married; wife	y
Hertel, Luther	4/25/1889 - 5/29/1893	13 T4N 76W	United States	NA	n

Holzwarth, John	3/6/1918 - 1/13/1923 11/23/1914 -	24, 25 T 5N 76W	Germany United States	Married; wife, three children NA	y n
House, Roy Husted, Lucian	3/22/1919 9/9/1918 - 5/27/1920 9/30/1885 -	2, 11 T4N 76W 35 T4N 76W	United States	NA NA	n n/a
Jones, Jacob Lee, Clarence Macy, Abram Mayfield, Issac Mitchell, Benjamin Mitchell, James	7/23/1889 6/16/1927 - 6/28/1939 7/21/1890 - 6/25/1892 7/9/1892 - 2/3/1898 9/5/1902 - 12/14/1908 8/20/1900 - 7/14/1908 3/17/1906 -	24 T4N 76W 1 T4N 76W 1, 2, 11, 12 T4N 76W 12, 13 T4N 76W 5 T3N 75W; 32 T4N 75W 30 T4N 75W	US; Ohio US; Iowa United States US; Indiana US; Illinois US; New York United States	Single Married; wife NA Single Wife (deserted in 1896); three children Polly Ann NA	y y n y y y n
Neill, James Nicholls, Henry Pratt, Arthur Quincy, Fannie	8/10/1907 5/7/1921 - 5/27/1926 12/4/1912 - 10/8/1914 12/26/1882 - 7/30/1891 1/15/1915 -	13 T4N 76W 13 T4N 76W 2 T3N 76W; 35 T4N 76W 25 T4N 76W	US; Colorado US; Nebraska US; West Virginia	Married; wife Married; wife Single	y n/a n
Rausch, John Renschaw, Clark Rhone, Henry Schenck, John Seymour, Charles Stone, Samuel Timerson, Elias Wheeler, Robert Wiswall, Harry Young, Christian	6/21/1920 9/28/1915 - 3/14/1921 6/22/1920 - 12/12/1922 6/28/1892 - 10/22/1904 9/23/1920 - 5/27/1926 6/11/1902 - 6/22/1908 5/29/1893 - 3/9/1906 3/27/1913 - 9/20/1920 10/4/1918 - 9/22/1923 5/15/1889 - 11/9/1891	25 T4N 76W 13 T4N 76W 25 T4N 76W 2, 11 T4N 76W 24 T4N 76W 8, 17 T4N 75W 13 T4N 76W 7, 18 T5N 75W; 12, 13 T5N 76W 2, 11 T4N 76W 12, 13 T4N 76W	Germany United States US; Colorado United States US; Minnesota US; Illinois United States US; Michigan US; Colorado United States	Widowed Married; wife Married; wife NA Single Single NA Single Married; wife Single Married; wife, child	n n y n y n y y n/a

Young,
Josephine

8/28/1905 -
1/28/1913

31 T4N 75W

United
States

Widowed

n

Interview with David Cooper
Oct. 1, 2010, Boulder, Colorado
Original audio file deposited at RMNP Archives

- Thomas Andrews: Okay. I'm here at Boulder, Colorado with David Cooper, October 1, 2010. This is Thomas Andrews, and we're going to do an oral history for the Kawuneeche Valley Environmental History Project. So David, good morning.
- David Cooper: Howdie.
- Thomas Andrews: How you doing? So first question, when did you first set eyes on the Kawuneeche Valley?
- David Cooper: Probably when I was a teenager because I grew up around Boulder, and we went to Rocky Mountain National Park all the time.
- Thomas Andrews: Okay.
- David Cooper: So that would be, oh, my first memories would probably be in the mid 60s.
- Thomas Andrews: Okay. And what do you remember about your first encounter?
- David Cooper: I remember driving over Trail Ridge Road in the 60s. I don't remember much about the Kawuneeche Valley itself.
- Thomas Andrews: Okay.
- David Cooper: Back in those days it was quite a sight if you saw an elk. There weren't as many elk then as there are now, but I remember seeing elk occasionally back then.
- Thomas Andrews: And over the years, what have been the most significant visible changes that you've noticed in the valley?
- David Cooper: Well, I think there's two visible avenues of change. One is my learning about the valley and seeing things and from that developing different perspectives as, because I didn't know that there was a Grand Ditch in my early visits, but later on I saw the Grand Ditch. Learned about it, so my vision of what the Kawuneeche Valley is has changed over time just by learning more about it. And, that's learning about just the physical aspects of people living there. And then there's also my understanding of it from the studies that we've done over the last 25 years. So I started doing researching on the Kawuneeche area in 1987, so however many years ago that is. Seems like a long time ago. My impressions have changed from

then, from those experiences. And I guess the biggest changes that I've seen have just been the collapse of the willows over the last 15 years. And just what I see is just a tremendous abundance of large animals in that same time period.

Thomas Andrews: Okay.

David Cooper: The encounters with large animals now are much more frequent than they were ever before. And it's just a different place now than it was even 25 years ago.

Thomas Andrews: Okay. So animals, willow. And in terms of the elk and moose and that sort of willow herbivory issues, when do you think people first started noticing problems on the west side?

:

David Cooper: Yeah, so I'm thinking back. So we started working on the effects of the Grand Ditch on the Colorado River and other things in the valley in the early '90s, so almost 20 years ago. And at the time there were no issues with willows. They were robust and in great shape and I never thought a thing about it.

Thomas Andrews: Just a non-issue?

David Cooper: It was a non-issue, and I had a Master's student, Shanda Wanger, who worked there in the early 90s, and then I had a series of PhD students, Scott Woods, Rod Chimner, and Cherie Westbrook who worked there in the 90s and early 2000s and even then, it just wasn't very apparent-- certainly when Rod and Scott worked there in the 90s it wasn't apparent that there were any changes in the willows occurring.

Everything seemed honkie dorie. There were scattered willow. There were scattered beaver ponds around, so we knew there was some flooding. There was some establishment of willows at the time. But it wasn't until the 2000s that I started to realize that something was going wrong, and we always thought it was just because there was a lot more elk and moose, and they were just breaking the willow stems off and stripping the leaves and that was causing the die back of willows in the Kawuneeche Valley which I believed probably until about two years ago.

Thomas Andrews: What do you believe now?

David Cooper: Well, it's interesting how in science you have certain preconceived ideas about what's going on, you know, herbivory's this dead thing, if there's an abundance of herbivory it can drive the ecosystem in these particular directions. But now I think herbivory's just one of the players in what's going on over there. And what we have found out is that there are

sapsuckers that use willows and aspen. They make these interesting geometric patterns on the bark, and they actually chip the bark away in these patterns of rows, of little squares where they chip the bark away.

And they lick up the sap. They eat the sap, it's food and they eat whatever gets stuck on there, insects and other things, and we started noticing two years ago that every place there was a sapsucker, these sapsucker marks or wells, they're called, the stems above them were dead. And we started then looking around and clearly every place that the sapsuckers had utilized the willows, the willow above there was dead. And what happens is that these are happening at about knee high to waist high on the willows, and sapsuckers hit all these willows.

There's lots of sapsuckers, they feed on hundreds and hundreds of willows at a time, and once the sapsuckers make these openings in the willow bark, what we found, have found out, out is that fungi get into those and the fungi are killing the stems. So it's actually a disease, kind of like a [indecipherable] type fungi that kills aspen. Once that stem dies, the willow will produce new shoots from below the point of death 'cause they can produce new shoots from the same stem. But now that those shoots are very short, the elk can browse them off and so there's no replenishment of tall stems of these willows that's occurring in the Kawuneeche Valley.

Thomas Andrews: So is that fungus ...?

David Cooper: It's natural. We're not sure what it is. We're having the genetics of these fungi analyzed in a lab in Michigan at a university, I think it's at the University of Michigan, but this is a Ph.D. dissertation of a student, Kristin Kaczynski, and it's interesting because I think what I have learned is that this is a natural process. This is not just produced by an over abundance of the elk. This sapsucker, willow die back, resprouting phenomenon is completely natural. It goes on in all the willow stands all over Colorado. The difference is that because there's this extra herbivory now the willows can't ever recover their height. And so that's the snafu, so it's not strictly grazing as the problem.

Thomas Andrews: Right.

David Cooper: But grazing in situations where there is this very high population of willow dying. There's a high population of sapsuckers I guess, and this constant die back and the fact that none of these shoots can now attain any height and most of them are just being killed. And some of these trees now are, some of these willows, are so browsed upon by moose and elk that a lot of them have died. So if you're interested, I can give you a time series photographs from '95 early in the 2000s, and 2008. You can just

watch the whole thing unfold. Up until '95, well even in '95, they had, it's just a photograph I took from a site where there's a little hill and you get a nice overlook and there was nothing going on in 1995.

This whole vision of the die back has occurred more recently than that so it's really the last ten or 12 years where the whole thing has kind of unfolded. Now why in the last 12 years? Are there that many more elk and moose now? Maybe, that could be it, where the population of animals that are staying in the Kawuneeche has increased so much particularly in the summer that it's really changed the whole dynamic of the system. So, we rarely saw elk in the Kawuneeche in the summer in the 80s or 90s. It's just, ver rare. Now you can't walk around without having to go around groups of elk. Their behaviors have changed, and they are now resident in the Kawuneeche Valley in the summer.

Which means that they're eating willows all summer, so there's never really any point where they can grow and release. In the past the elk used to summer at higher elevations, it seems like, you'd see them in spring down low, but then they'd be up to ten or eleven thousand feet most of the summer. So the fact that the willows are becoming shorter and lots of dead stems feeds back into beavers in the role of beavers in the whole hydrologic history and hydrologic future of the county. The beavers have to use willows to build dams.

Thomas Andrews: Right.

David Cooper: If there's no live tall willows, they can't build dams. If they can't build dams, they can't flood the valley. If they can't flood the valley, the valley dries up, and willow reproduction is tied to beaver activity.

Thomas Andrews: So the beaver populations ...?

David Cooper: Basically zero now.

Thomas Andrews: Oh zero, really?

David Cooper: Yeah it's basically zero.

Thomas Andrews: Do they – this is a silly question, but do they move?

David Cooper: Yeah they move, but there's always been, I would say based on the land forms that occur in the Kawuneeche Valley, there are over probably several hundred years, there's always been groups of beavers in the Kawuneeche Valley. There's so many willows there that beavers could maintain a homestead for a long, long time without having to move. There's so many large old willow complexes there, so then that feeds back

in, now that the valley's dried up, there's no flooding. There's no willow reproduction so over time perhaps these old decadent willows will just grow old and that will be the end of the whole willow system in the valley.

Thomas Andrews: What role—what role do you think water table issues, you know, and Grand Ditch diversion and all that is playing?

David Cooper: It plays a small role.

Thomas Andrews: But it's been more of a kind longer standing ...?

David Cooper: It's a longer term thing, but the effect of beavers is gigantic, and this is what Cherie Westbrook did her PhD dissertation on is kind of the role of natural hydrologic processes of the Colorado River versus the role of beaver on creating hydrologic regimes that have created and maintained the Kawuneeche Valley, and she showed that one beaver dams in a drought year, super drought year, I think it was 2002 when she working and 2004 so these were some of the driest years in the last 50, produced more flooding and higher water tables than in 2003 which produced like a ten to 20 year flood. So beavers are the real drivers of the hydrologic regimes of the Kawuneeche Valley.

Clearly floods that move sediment are important as well, but beavers are really the big story in that valley. And what I have recommended to Rocky Mountain National Park is that they build some exclosures along the river where there still are willows just to keep the elk out so that the beaver can have its access to willows along the stream channel to kind of build and maintain dams and have areas that will naturalize. So that hasn't happened yet. Hang on a second, this is Evan, a guy who works for me. [phone interruption—not transcribed] Guy that works for me full time at Berkeley, he did his master's with me. Anyway, sorry for the interruption there.

Thomas Andrews: Oh, that's okay. And then with the elk issue in particular, elk-willow, that's noticed on the east side as early as 1930 or so, and it seems like that's received all, virtually all of the attention.

David Cooper: The east side?

Thomas Andrews: The east side for the last eighty years almost.

David Cooper: And I think that's just a social thing. The park staff is, all their resource staff, are primarily on the east side.

Thomas Andrews: Yeah.

David Cooper: A lot of the park staff don't do a ton of habitat, a ton of work on the west side. I think that's changing with the Grand Ditch blow out. There's a lot more interest on the west side.

Thomas Andrews: Do you think that the west side willow problems are a report of the same interactions that have happened on the east?

David Cooper: Could be. I think that the elk populations on the east were even higher, and there were other human things, you know, probably Moraine Park was cleared of willows so they could build a golf course, so I think there were other human activities that also affected things a little bit here. I would say in another ten years if things go the way they are, it's not going to look too different than Horseshoe Park or Moraine Park. I mean, it could get that far pretty quickly, just based on the changes that have occurred in the last ten years.

Thomas Andrews: There doesn't seem to be a sort of equilibrating factor?

David Cooper: It's getting worse. The rate of change is speeding up I would say. I mean, it's, it's, it's, yeah, it's pretty much toast.

Thomas Andrews: And what evidence have you, if any, what evidence have you seen of say more regional or global processes of change, whether it's climate or biogeochemical cycles or those sorts of things?

David Cooper: Well, we're looking at that issue in Yellowstone where we have a long term willow project, and it seems like the warming has actually been good for the willows.

Thomas Andrews: Oh really?

David Cooper: Yeah, it allows them to grow more. They have adequate water. They've been able to grow better, so there's been quite a resurgence of willows in certain areas where they have adequate water availability in Yellowstone. So I don't think . . . you know, willows, I think they can grow in warmer or cooler environments. I think the big thing is that they have to have a lot of water. I mean they really need to be periodically flooded or have a water table very close to the surface. Interestingly there's this area called Endo Valley at the upper end of Horseshoe Park.

If you go above the Long Lake alluvial fan, there's a big willow stand up there that has a huge population of beavers now and, boy, that whole system is in good shape still.

Thomas Andrews: And is that a restoration success?

David Cooper: No. It's just never, no--those willows have never been knocked down by the animals. That area has always been in good shape. For some reason there's just not a lot of elk use in there. I don't know why. So that's an interesting site. There's plenty of sapsucker use in there as well. They get the fungus. They die back but they sprout again. The same with Wild Basin which is on the southeast corner of the park along the St. Vrain River in there. There's a huge willow system in there. Lots of active beaver. Lots of cutting by beavers. Not a lot of elk use in there so the whole system is in great shape because sapsuckers hit a stem and this six foot stem dies back but resprouts come. Well, a good healthy willow with lots of water they can grow a six foot stem in two, three, four years, so it's not a big deal to lose the stems.

Thomas Andrews: Right.

David Cooper: But, you know, if there's no beavers and it's dry they don't really grow much, and if they don't grow much and the elk are browsing those off, then the system is kind of stuck. And lots of areas in the Kawuneeche Valley have deep water tables, those willows are quite dry now.

Thomas Andrews: Okay. Because of Grand Ditch?

David Cooper: Because of the lack of beavers.

Thomas Andrews: [indecipherable]

David Cooper: Yeah, Grand Ditch has definitely reduced the flow of the Colorado River and it's most apparent in the middle of the summer, but the Colorado River in the summer it's only maybe eight inches deep. So if instead of eight inches, it's four inches deep, it doesn't make a huge difference in the overall water table configuration of the valley. But if you build a beaver dam and bring the water table up four feet, damming the whole river and flooding it out onto the floodplains, that's a gigantic affect.

So again, that's what Cherie worked on. She mapped out the whole thing, and it's a very convincing story that if beavers are really the master hydrologists here. They can in some respects make up for the presence of the Grand Ditch. So that's why all of these variables come into play. If you have a lot of elk and they're knocking the willow back and you can't support beavers, well then the effect of the Grand Ditch comes much more extreme. But if you have plenty willows and you have plenty of beavers and they're flooding the river, damming the river and flooding areas and creating this hydrologic dynamics, then the effect of the Grand Ditch is much smaller.

Thomas Andrews: So do you think that there's a need then for not just those exclosures but then also more aggressive restoration with exclosures, beavers, ...?

David Cooper: I think there's such exclosures then things will tend to recover. It's just a matter of stopping the use because there are now three exclosures that were built for a moose study. I think the exclosures were put in about 2000, and you walk up to those exclosures and it's a jungle of willows in there. And right outside of it's just [sound like air pushed out of whoopee cushion]

Thomas Andrews: Exclosures for the willows will help enough?

David Cooper: Yes.

Thomas Andrews: And then beavers will come.

David Cooper: The beavers can then invade, yes. There have been beaver a little further upstream from the main part of the Kawuneeche Valley on the trail up to Lulu City. There's a beaver colony up there, but that was abandoned about two years ago. So they're down. Won't be any active beaver at all. And you know there's even a stream called Beaver Creek.

Thomas Andrews: Oh, yeah.

David Cooper: Haven't been any beaver along there

Thomas Andrews: My research on homesteading as well as on the west side ranger reports. It's clear that there were beavers everywhere, they're active and they were a huge problem.

David Cooper: Any trapped the hell out of them in the 40s, 50s, and 60s.

Thomas Andrews: Yeah, they did quite a lot.

David Cooper: Bruce Baker did a study of that. I think he documented pretty extensive traffic where they removed dozens or hundreds or maybe hundreds of beavers from that area.

Thomas Andrews: Did a lot of blasting of dams. All sorts of stuff.

David Cooper: I understand that there was a nuisance and then the great restoration, well several great restoration opportunities occurred there, not only by reducing herbivory by fence building and a lot of beavers to reestablish the hydrological regime but in the area below the road that goes to the Holzwarth Ranch. So the Hozwarth Ranch goes across here and the areas

to the right are pretty much natural. The area to the left where there are pastures, and those areas were completely willow, de-willowed.

Thomas Andrews: Right.

David Cooper: The second one is the Dick property which is a little farther down in the valley. Again it's a huge area right on the river. All the willows were removed.

Thomas Andrews: Yeah.

David Cooper: So those are two phenomenal opportunities for actually planting willows and increasing the willow base for the future to just renaturalize the valley.

Thomas Andrews: What's in those pastures, are you familiar with, is there still a lot of timothy and the other exotics that were planted there?

David Cooper: Yes, absolutely, timothy.

Thomas Andrews: Rye, that sorts of thing ... Clover, actually.

David Cooper: Lots of clover. There's lots of timothy, smooth brown, orchard grass. These are the central European pasture plants that are everywhere in the United States.

Thomas Andrews: And I mean, do those grasses spread out from those pastures?

David Cooper: Yes.

Thomas Andrews: They covered a lot of the rest of the valley here?

David Cooper: A lot of them went to parts of the valley so where you have beavers those plants are generally not present and you end up with a willow and sedge matrix. And beavers do more than just flood the channel, but, they actually divert the whole river out onto the floodplain, and in many places the river will cut a whole new channel as it's flowing out there. And then the whole river will go that way and it will abandon this piece of the channel. And those old pieces of channel create geomorphic hydrologic and ecological diversity because then you have an abandoned channel segment so you get all these other communities that develop there. So that's really important as well. But timothy is a formidable opponent.

I mean, it's amazingly aggressive grass that can deal with all kinds of water level scenarios but it doesn't really like saturated soils. And over a period of maybe a few decades of real saturation that will be created by beavers you can probably locally extirpate it.

Thomas Andrews: But the converse would also be true, that if this willow die-off scenario and you said then you might actually have areas ...

David Cooper: Oh, absolutely. Absolutely because where there's no willows, there won't be any beavers, where if there's no beavers then you are going to dry the place out and that's perfect grounds for timothy and red clover and all the rest of the crap that's out there.

Thomas Andrews: Okay.

David Cooper: So that whole story is yet to be told. Now, there are plots that have been put into this area to look for just those kinds of changes. The National Park Service inventory and monitoring program has plots in the Kawuneeche Valley that will be monitored almost every year, so that will be a part of their set of questions. If there's no beavers anymore, the willows are dying back--what's going to happen here?

Thomas Andrews: Is cheat grass in the valley?

David Cooper: No. It's too wet.

Thomas Andrews: Okay.

David Cooper: Yeah, and it's quite high. It's 10,000 feet there's no cheat grass. But this stuff is worse than cheat grass.

Thomas Andrews: Yeah.

David Cooper: Cheat grass is short. Timothy's waist high. And it's super aggressive out there. And it's not just timothy, there's another one called meadow, there's meadow fescue and then there's another one [indecipherable] meadow foxtail. Looks like timothy, the heads look like timothy but it's a different genus. The structure of the florets are different. So there's several. It's not just timothy. There's a bunch of exotic grasses that are in there--and clovers. And clovers are very successful because they're nitrogen fixing and they've done very well.

Thomas Andrews: So it's almost a whole sort of system then?

David Cooper: It's a whole group of plants that have invaded. I'm sure they were planted by the Holzwarths and other users of the landscape. But you know, even just cow, uh, horse feed, has mostly been timothy grass, clover and all that stuff. Most people feed animals anywhere you're going to get that kind of invasion.

Thomas Andrews: So during the dude ranching period the horse trails would have been vectors for that?

David Cooper: Still, they still are because you have the Sombrero Ranch down at Grand Lake where lots of horse packers going up the Tonahutu and all the other trails all over the valley. And you see clovers all along the trails up and down the region. Yeah, it's everywhere. From my traipsing around Yellowstone over the last 12 years, there's not a meadow below ten or 12,000 feet there that doesn't have timothy in it.

Thomas Andrews: Do you see ... what evidence do you see in the higher, you know, alpine areas? I know you have [inaudible].

David Cooper: Above 10,500 feet there's virtually no exotic plants.

Thomas Andrews: Really.

David Cooper: They can't, no. None of those exotics can [inaudible]. They just can't do it so the alpine. The only place you see any exotics are like along the roadsides. The tundra itself doesn't have any.

Thomas Andrews: Okay.

David Cooper: And even the high subalpine so tree line to probably 10,500 feet, there's virtually no exotics.

Thomas Andrews: I completely forgot my question. Hold on a second. [long pause] I'm going to kind of change gears. What do you think of the Park's efforts to interpret the ecology on the west side for visitors?

David Cooper: I've never been to one of their programs.

Thomas Andrews: Okay.

David Cooper: So I really don't know much about it.

Thomas Andrews: But with the signage?

David Cooper: I haven't seen much. Honestly, I have been out with some of the interpreters. Honestly, they didn't know the difference between aspen and balsam poplar. They didn't know some of the basics.

Thomas Andrews: They weren't bestowing confidence?

David Cooper: Bill Romme and I gave talks last year at an interpreter's workshop. Every spring they have an interpreter's workshop, and he talked about pine

beetles, and I talked about willow dynamics in the Kawuneeche Valley. It as mostly new information for people including the interpreters.

Thomas Andrews: Okay.

David Cooper: That's why I think writing your book or writing other books that are at the interpreter level would really help provide them with better information and better integration of pieces of the stories that are relevant locally.

Thomas Andrews: Right.

David Cooper: They're not scientists, they're not up on the most recent research. They don't talk to us. I've never had an interpreter call me up and say I want to do a story on willows. What do I say? Never. Never. Now I've been on trips with them, like you went on the ski trip that we went on, so there was an interpreter that came on that trip.

Thomas Andrews: Right.

David Cooper: That's like the first time I've ever been out with one. And I've worked on the Westside Park for 23 years.

There doesn't seem to be. . . . I don't know where they're getting their information. We'll just throw that out. I know they don't read scientific articles. I've had three, four, five, six probably seven graduate students work on the west side. I don't know if they ever interacted with any of those people.

Thomas Andrews: I remembered my question. Go back to that so in the homesteading records constantly mention native hay, so I'm wondering . . .

David Cooper: Sedges. So if you go up to Big Meadows. Do you know where Big Meadows is?

Thomas Andrews: Yeah.

David Cooper: Big Meadows was homesteaded. The trail up there was just . . . Green Mountain trail was a road. It's a wagon road, and up there's a house and a barn. And in the barn there's still hay that he cut. Big Meadows was drained. He put a ditch down all the length of Big Meadows, and the native hay is all in there, and it's all sedges.

Thomas Andrews: Okay. Would those have been much less productive than the exotics?

David Cooper: No, I think they're just—I don't know if the protein content is as high. I think because they're wetter. It's harder to get in there and actually hay it. I don't know if the cattle eat it as well. I don't know if the ranchers were

as used to working with it. You know, some of it is familiarity. Where did they come from? They must have obviously done hay operations somewhere else, and I think they were just used to working with those grasses and that's probably what the Soil Conservation Service at the time was giving people to reinvigorate their meadows or to restore their meadows was all of these exotic plants.

The Army brought it out here as you know in the 1870s to Yellowstone. So they brought timothy out there, and they were planting timothy. Some of the big meadows there for their own horses. So things were changing a long, long, long time ago.

Thomas Andrews: Right.

David Cooper: I don't know what other native hays there would be. It's not like there's big grasslands up there. I don't know what the, I would bet the Holzwarth Ranch in the early days was willows with sedges and beavers and it was a big flooded mess. And it took him a very long time to pull all those willows out, to drain the site and to get it to be a pasture.

Thomas Andrews: Yeah, it's clear that that was, that process didn't move very quickly or . .

David Cooper: Right.

Thomas Andrews: Successfully until after World War II and then he gets the heavy equipment.

David Cooper: Oh, okay.

Thomas Andrews: And he starts bringing cats in there.

David Cooper: Oh, really.

Thomas Andrews: And then he can really tear it up.

David Cooper: Then he pulled everything out, leveled the ground.

Thomas Andrews: Before that the early homestead records are just something on this project that has been really great and the park . . . all of the homestead applications, and all the paperwork involved with that and has information on how much they cleared and how much they planted.

David Cooper: No kidding.

Thomas Andrews: Year by year.

David Cooper: Wow.

Thomas Andrews: Yeah.

David Cooper: Are there any like, general land office records, from?

Thomas Andrews: Well, that's what these are.

David Cooper: That's what these are.

Thomas Andrews: This is the GLO stuff.

David Cooper: Wow.

Thomas Andrews: So it's pretty cool in terms of giving you a sense of just how slow and difficult it was.

David Cooper: Now I heard when they brought, when the Park got the Holzwarth Ranch, I don't remember who told me the story that the rancher asked the Park Service how they were going to maintain the meadows and keep the willows out. And I think he was quite dismayed to learn that they were going to let the God damn willows back into his beautiful pastures.

Thomas Andrews: Yeah at that point his family had fought a sort of 50 year willow war.

David Cooper: It's a war. Absolutely, it's was a war against willows and beavers. And he set it up so there is no invasion of willows into his meadows. Nothing. They're dry, and they're dominated by exotic pasture grasses. There's no, there's really no naturalization going on.

Thomas Andrews: He effectively won at a certain point?

David Cooper: He won at least now.

Thomas Andrews: Right.

David Cooper: The only thing that would change that would be if there's enough willows on the banks and beavers could start flooding out into his meadow and effectively change it, but I haven't seen any evidence of any of that going on down below the Holzwarth Ranch road. And the Dick property is just as bad. It's just a monoculture, timothy and sweet brome.

Thomas Andrews: It's amazing, the road up Baker Gulch, the two sides are just two different worlds.

David Cooper: It's the same on the Holzwarth Ranch.

Thomas Andrews: Yeah.

David Cooper: You walk out that road or drive out that road, and this part looks like a Rocky Mountain National Park, and this side looks like Kansas. Quite interesting.

Thomas Andrews: Yeah, it's a pretty interesting spot or set of spots.

Thomas Andrews: How do you think ... This is going back to the strand we were on before about native [grasses. What changes have you seen in the Park's science programs, the research programs and their use of ecology in management.

David Cooper: Let me think back. So the first managers I worked with, Craig Axtel was there back, I think, in the 80s or early 90s. I think he was the first one I worked with. He was very interested in science and using science to help inform Park decision-making. Same with Ken Zernowski and Ben is definitely into that. So it's, I think, it's seeping its way in there slowly but surely. The Park Natural Resource staff has called me more probably in the last two years than in the last 20 put together. So I know that they are interested in learning about these landscapes and doing the right things. So I think that science is making it into resource management now more than ever before.

And I'm not sure if it's because Ben has instilled this in the staff that they will work with these outside people like myself and others, or if the people they have now are just interested in that. But it's much closer--much closer—and I find myself going fieldtrips with just park staff to talk about issues and to look at things. So I feel that there is technology transfer going on there, at least with what we're doing. So it's pretty good. I would say I probably work in 25 national parks and other things across the United States, maybe 20. I can't even remember. I just, the interest in using science for decision making and landscape management has increased a lot.

Thomas Andrews: Systemwide?

David Cooper: Systemwide, absolutely.

Thomas Andrews: And would you put Rocky toward the middle, toward the top ...?.

David Cooper: Toward the top, absolutely. For example there they are active in elk management and vegetation management whereas Yellowstone isn't doing anything.

Thomas Andrews: They're just hoping wolves take care of it all?

David Cooper: They have, yeah, they have these natural regulation theory that you just leave it alone, it'll find it's own balance and everything will work out.

Thomas Andrews: They're still on that?

David Cooper: Oh yeah. That is still the driving force in resource management of elk, wolves riparian areas and it has not been working in the past, with the advent of the wolves ...

Thomas Andrews: Have they had success.

David Cooper: Well, they're just there's a lot of inertia in Yellowstone to overcome to actually do anything. Like building exclosures to keep elk out of riparian zones. I've been asking them to do that for ten years. It'll never happen. They'll have to have a major change in what's going on there and now, you know, a lot of people believe that wolves are going to take care of all the problems. Well, I don't know if that's true or not. Our research has shown that maybe in some places but certainly not everywhere.

Thomas Andrews: You think there's any place for wolves in Rocky Mountain?

David Cooper: Um, it would be very tough.

Thomas Andrews: Politically?

David Cooper: Well, there's just so much front country. You have the high mountains and then all the meadows are, have roads and tourists. So that's where all the elk are. It would be hard for me to imagine a family from Chicago standing there with their little kids and here comes a pack of elk and they take down this elk. You know, a wolfpack takes down a wolf in front of them and rips his throat out and throws blood and guts everywhere. I think that would be pretty tough for people. And just the Estes Park community or the Grand Lake Community, I can't see them tolerating wolves at all. It just, Rocky just seems quite small for wolves.

Thomas Andrews: Yeah.

David Cooper: But I don't know. They might make it there anyway so hopefully we'll find out. But it's small and there's roads through all the big elk areas. Right down in the whole Kawuneeche Valley. It's a small valley. It's not like the Lamar Valley in Yellowstone, that's miles and miles across plus all those other giant meadow complexes because that whole northern range is arid so you get big meadows with some sage and douglas fir but big parklands which you don't have in the Rocky. It would be tough. I think maintaining a small population of elk is fine. You know the affect

of moose is still an unknown in my view. The moose are resident, they're not really migrating much.

They are complete willow feeders, and in the summer that's what they eat. So I don't really know. I don't know, I'm not convinced that moose are native to Colorado. They certainly weren't here in the late 1800s so who knows what's going on with moose.

Thomas Andrews: Right.

David Cooper: That's another story.

Thomas Andrews: Yeah, I've gotten, I'm getting into that.

David Cooper : Oh, you are?

Thomas Andrews It's a weird one.

David Cooper: You know, if you read about it, during the little ice age in 1600s or 1500s through the mid 1800s, they may, moose ranges may have really contracted, but now they're expanding back out again because even in interior Alaska, I've talked to Eskimos who've said when they were kids there were no moose in these areas. But now there are moose everywhere. So they may have expanded their ranges through Colorado even if the Division of Wildlife wouldn't have helped them.

Thomas Andrews: Well that's actually an argument that the Division of Wildlife used, and that the park who is, when the park was under natural regulation. They had to pass on that proposal to introduce moose into the park because David Armstrong's work made it clear that they couldn't really justify introducing them, but they kind of gave the wink-wink, nudge-nudge, you know, let them go in North Park. You know, eleven miles from the park boundary or whatever it was, and there was this argument that essentially white people had interfered with the natural process of moose expansion.

David Cooper: I see.

Thomas Andrews: And so what they were doing wasn't a reintroduction, I mean it wasn't a reintroduction so much as ...

David Cooper: I see, a restoration.

Thomas Andrews: Yeah. Of a kind of thing that would have happened but never did. Interesting logic.

David Cooper: Well I remember when I first started working in Big Meadows in the 80s there were moose in there then so there were already large populations of moose on the west side of the park in the Kawuneeche Valley in the late '80s so they've been there for ...

Thomas Andrews: They set up shop pretty quickly.

David Cooper: Yeah, they did, they came over the divide and they've been there. You know mountain goat is another one that has been reintroduced, of course, not native.

Thomas Andrews: Are they getting into the Never Summers ...?

David Cooper: I'm pretty sure that the park has removed some animals from the Park. I've seen them on [Berthoud Pass and obviously they were introduced in Mount Adams and Mount Lincoln in the northern Front Range. All they have to do is cross I-70.

Thomas Andrews: I have one minute left on my card. So let me just ask this last question. What do you think of the biggest unknowns, the most important unknowns in terms of the valley ecology?

David Cooper: Just what happens if the willows don't recover. The willows, to me the willows are kind of the central part of how the whole valley functions. It's what beaver eat. It's what they use to make their dams. It's what controls the hydrologic regime. That controls all of the rest of the flora and fauna that occupy valley. The willows are really interacting with, the beavers are really the keystone to the whole thing. I don't know how the die back in the lodgepoles is going to affect the overall hydrologic regime of the valley. Whether there'll be rilling. I don't know what's going to happen up there as well. Hopefully somebody we'll get a handle on that pretty soon because that could produce a lot more sediment and a lot more different kind of runoff than there has been historically it might be a faster runoff because there's no shade.

So that can also bring the peak runoff earlier in the summer and produce a longer, drier river which is ..

Thomas Andrews: Would that directly reinforce those other changes?

David Cooper: It would reinforce the other changes in the absence of the beavers. So that's kind of the suite of things that I think about, what's going on with those things.

Thomas Andrews: Okay. Well thank you very much. I appreciate it.

David Cooper: If anything comes up and you want to chat, just let me know. We can set up a phone interview or whatever ...

[End of Audio]

Duration: 47 minutes

Interview with Chris Kennedy
Nov. 24, 2010, Denver, Colorado
Original audio file deposited at RMNP Archives

- Thomas Andrews: All right, let's see. ... Anyway, we're here in my garage in Denver. This is Thomas Andrew with the Kawuneeche Valley Environmental History Project. I'm interviewing Chris Kennedy, Fish and Wildlife Service. All right. So the first question is how would you characterize the fisheries situation or sort of fisheries dynamics in the Kawuneeche prior to ... prior to white settlement, or, you know, indirect effects of white settlement?
- Chris Kennedy: There is historical evidence that there're fish—the native cutthroat trout—were quite abundant in the Colorado River within the Kawuneeche Valley. I do .. I found some documentation from a guy. His name was Irving Hale, and he, when he was I think he was 16, 17, 18 years old, he came up to Grand Lake. Him and his buddy spent the whole summer fishing, and he kept a daily journal. So there's some good evidence that I think one day he went up ten miles up the Colorado River and was catching fish up there. So he was getting pretty good historic information as to where fish were. So there was an abundance.
- Thomas Andrews: 1880s that he came?
- Chris Kennedy: 1860s.
- Thomas Andrews: 1860s, wow.
- Chris Kennedy: So ... but pretty much it appears that what we now know to be fish barriers like waterfalls and cascades kept fish out so there were not fish above those areas historically.
- Thomas Andrews: Okay.
- Chris Kennedy: But the main part of the Kawuneeche Valley didn't, there were abundant amount fish through that area.
- Thomas Andrews: And that would have been Colorado River cutthroat?
- Chris Kennedy: Colorado River cutthroat, yes.
- Thomas Andrews: Okay. And then what other fish would there have been?
- Chris Kennedy: There are suckers, sculpins as well.

Thomas Andrews: And then what's the situation in terms of tributaries? How far up the major ones that they're abundant.

Chris Kennedy: Probably not very far. Once things got pretty steep, it would have excluded the fish. So it's really not the main part of the Kawuneeche Valley. There probably weren't fish very far up the, the tributaries. A little further south there's probably fish within, like, Tonahutu Creek up to Grand Falls, I believe, and then up the North Inlet to Cascade Falls and then just on the East Inlet just up to Adams Falls so not very far up above Grand Lake. Those would have been probably the upper limits of fish.

Thomas Andrews: And some of the lakes would have been barren.

Chris Kennedy: Yes.

Thomas Andrews: And those fish populations were post-glacial?

Chris Kennedy: Well, yes.

Thomas Andrews: And they would have just moved up the river?

Chris Kennedy: Yeah, the theory is that cutthroat trout are descendants of rainbow trout. They were historically in the Pacific Ocean, and they moved inland up what would now be the Columbia River and kept working their way up. They got into the Green River, and then they worked their way down the Green River into what's now the Colorado River and then just kept, you know, heading up that way.

Thomas Andrews: Okay. And so how long ago did the Colorado River cutthroat .develop or speciate or whatever the language is?

Chris Kennedy: That's a tough one because cutthroat trout is a species, but Colorado River cutthroat trout is a sub species and I believe there's 13 or 14 recognized some species, so it's, it's kind of hard to tell.

Thomas Andrews: Okay. When was that name first used—Colorado River cutthroaat? Or when was the subspecies recognized, do you have a sense of that?

Chris Kennedy: In the 1800s--probably 1870s, 1880s.

Thomas Andrews: Okay.

Chris Kennedy: Would have been the first time.

Thomas Andrews: That there's recognition of the subspecies?

Chris Kennedy: Yes.

Thomas Andrews: Differences.

Thomas Andrews: Okay. And if we sort of run that history a little bit further along, I mean, it seems like beaver are pretty critical in shaping in the Kawuneeche's environment over the very long run. But as for trappers, they seemed to have probably eradicated beaver in the valley,. even though I'm not really sure that happened. I don't know, you may have a better sense of that, but to the extent that beaver were reduced, would that really have affected spawning grounds and that sort of thing for the trout or not really?

Chris Kennedy: Yes and no. I mean the type of spawning grounds, cutthroat trout need gravel to spawn, certain size gravel, so actually probably beaver would hurt that by creating ponds, and having more sediments along the stream and that would cover up good spawning areas, so that would probably hurt them, but also the pond would create more habitat for them, as well.

Thomas Andrews: Okay. What do they eat mostly--the trout?

Chris Kennedy: Invertebrates.

Thomas Andrews: Okay.

Chris Kennedy: They like invertebrates.

Thomas Andrews: Okay. And then what have you learned about the impact of what fishermen like Hale, on native trout species and the stocking efforts? Is there a sense of actually a kind of a real decline prior stocking or was stocking a supplement initially?

Chris Kennedy: Back when Irving Hale was in the Grand Lake area, there weren't many regulations, and those that were in place they didn't really have a very good means for enforcing them.

Thomas Andrews: Right.

Chris Kennedy: So people would come into them and the middle park area was a very well known historically for very good fishing, but people would come up from the Front Range, the farming area, Denver. They'd come up. They would fish. They would catch hundreds of fish, and they would keep every one of them. They would dry them or preserve them in vinegar and then bring them back to Denver, or whatever Front Range city that they lived in and share them with their friends. So fishing like that where you're depleting so many fish, yes, that definitely had an impact. And the State of Colorado realized that and pretty early on, in 1881, is when Colorado first

built—they built their first fish hatchery. Fishing was extremely popular, and it was a lure to get people to come to Colorado as well.

Thomas Andrews: Okay. And then those, initially, those hatcheries would have been doing rainbow and brook trout?

Chris Kennedy: Initially, yeah. They wanted fish that would meet their needs so they would bring in brook trout for the eastern United States, rainbow trout from the western U.S. They wanted them to have a good hatchery in the Park and then once they stocked them out to grow really fast, so they were kind of bringing those in. These were species that had been raised before in different parts of the country, and they had, they were pretty good for stocking. It wasn't until 1888, I believe, that the state first successfully raised the native cutthroat trout and stocked those out.

Thomas Andrews: Were those Colorado River or greenback cutthroat?

Chris Kennedy: They were greenback cutthroat trout from Twin Lakes, near Leadville.

Thomas Andrews: Okay. At the Twin Lakes Hatchery?

Chris Kennedy: Yeah, but that's one of the very few places in the state where greenback cutthroat trout eggs were collected. Most of the big egg collection points were in the western part of the state--Grand Mesa Lakes and Trappers Lake were probably the two big ones.

Thomas Andrews: Alright then, I know you've been compiling an exhaustive the database on stocking within the Park, so what's the stocking history?

Chris Kennedy: Well, the stocking database that I'm working on is actually a statewide database. It's going to cover a 100-year period or a 101-year period from 1872 to 1972. And it's not, there are missing records, but right now that database contains stocking of over 1.2 billion fish. So actually I'm missing about 90 years' worth of federal stocking so there's still a good chunk there. So it's a lot of fish, and so they did a lot of stocking over a 100 year period.

Thomas Andrews: And so within the Kawuneeche I mean initially did they bring fish from the Estes Park Hatchery, primarily rainbows and Brown trouts, and when the Grand Lake Hatchery begin? And what do you see as the major historical shifts I guess in stocking.

Chris Kennedy: Initially the stocking for Grand Lake area would have come out of the Denver Hatchery, which was the first hatchery. I believe it was 1890s was the first stocking within the Grand Lake area that I'm aware of. And I believe in the State Fish Commissioner's report for that year, he does

target the Grand Lake-Middle Park area for further stocking, seeing that a lot of people go up there. It gets deleted, depleted, and it should be stocked continually, and he also believed that hatcheries should be built in that area to keep stocking. Wasn't until I believe 1904 the state built a hatchery in Sulphur Springs. No, I have to take that back.

In 1907 was when they built a hatchery in Sulphur Springs, but the federal government was involved with the fish in the Grand Lake area starting in 1904. The Leadville National Fish Hatchery wanted to set up a spawning station at Grand Lake, and their plan was to build a hatchery along the North inlet and build this screen across the north inlet that would stop fish coming out of Grand Lake and going up the North Inlet and wanting to spawn. It would catch them. They would collect the eggs, hatch those out and stock those throughout the whole area so they tried that in 1904.

They had very high water that blew out the screen that they had so they didn't collect very many eggs. They tried it again in 1905. Same thing happened. So they decided what they were going to do is to create just a hatching station instead of a spawning station so their main source of cutthroat trout eggs at that time was Grand Mesa Lakes near Grand Junction, and they would collect the eggs there, bring those to Grand Lake and then hatch them out in outdoor troughs.

Thomas Andrews: And that's federal then, that hatchery in Grand Lake?

Chris Kennedy: Yeah. So it was an outdoor operation until I believe 1907, 1908 and the citizens of Grand Lake actually built them a hatchery building. By the time we get to 1910 or so, they didn't feel, the federal government didn't feel that it was worth the effort to maintain that. And like I said, the state opened up a hatchery in Sulphur Springs in 1907, but that quickly didn't work out. They had water source problems so after Leadville abandoned the Grand Lake Hatchery the state took that over and they operated that until 1942.

Thomas Andrews: Okay. And so initially they were doing Colorado River cutthroat. Is that what they continued to do there?

Chris Kennedy: Yeah for the most part, yeah.

Thomas Andrews: So when they people are stocking other species in the early 20th Century in the Kawuneeche are getting them more distant hatcheries then?

Chris Kennedy: Yeah. Probably some of those early stockings before the hatcheries were built they were probably brook trout and rainbows.

Thomas Andrews: But then you're sense then is once Grand Lake's built or actually mostly stocking native fish on the west side?

Chris Kennedy: Definitely when Leadville was there, that's all they were stocking. When the state took it over, the records aren't as good. They were probably stocking cutthroats as well brook and rainbow.

Thomas Andrews: So they're doing all of them?

Chris Kennedy: Yeah.

Thomas Andrews: And then my sense from reading what I've been able to find on the fisheries history in the Park, around '36 or something the Park stops stocking non-native fish or announces that it's going to?

Chris Kennedy: Yeah. The mid 1930s I actually the first time the Park Service came out with management guidelines. Prior to that, the parks were kind of on their own, and Rocky Mountain National Park felt fishing was a huge draw, and they were just stocking fish until it was a put and take fishery where they stocked fish and the fishermen would take them out, so they were just stocking everything. By stocking multiple species, they felt it was more efficient. Each of those three species, the brook, the rainbow, and the cutthroat spawned at a little different time. Brook trout are fall spawners, so they would spawn in the fall. Their eggs would hatch. Early in the spring they could stock those out, and then would bring rainbow trout in.

Hatch those eggs out. Stock those out and then they could bring cutthroat trout eggs in so basically they could triple the output of the hatchery by stocking multiple species. So that continued to the mid 1930s and, like I said, that's when the park service first came out with fish management guidelines, and it was still a stocking policy, a fishermen-oriented policy where they encouraged stocking of native species, but they didn't require it, and they discouraged stocking of non-natives so that by the late 1930s for the most part that's what the Park went to.

However, most of the fish, the cutthroat trout they were stocking, were Yellowstone cutthroat trout which was another subspecies that can hybridize with the native cutthroat trout, and they probably continued that for a couple of decades. There was a very large fish hatchery up in Yellowstone. It was very easy to get eggs from there.

Thomas Andrews: So they were bringing the Yellowstone down from Yellowstone?

Chris Kennedy: Yes.

Thomas Andrews: Were those ever propagated in Colorado?

Chris Kennedy: Not that I'm aware of. They would just bring the eggs down.

Thomas Andrews: By truck or something?

Chris Kennedy: Yeah. Initially by train. They had special boxes that they would put the eggs in and bring them down and let them go. Leadville also did that starting in 1911 or so, that was their main source of cutthroat trout eggs for decades.

Thomas Andrews: Leadville did Yellowstone cutthroat, or Leadville did the Colorado River?

Chris Kennedy: Leadville brought in Yellowstone cutthroat trout from Yellowstone National Park.

Thomas Andrews: They'd bring in the eggs and hatch them there?

Chris Kennedy: Yeah. That was their main source of cutthroat trout.

Thomas Andrews: Okay.

Chris Kennedy: For decades.

Thomas Andrews: Were there many differences between Yellowstone, Colorado Rivers. Are they visible to the eye, are they significant biologically?

Chris Kennedy: I mean, yes they are visible to the eye. Cutthroat trout or Colorado cutthroat trout, the subspecies that are found in Colorado, are a lot brighter in color than the other cutthroat trout subspecies. And spotting patterns are a little different.

Thomas Andrews: Okay. And during those decades when you have all three of these species being stocked, I mean, how were the natives competing?

Chris Kennedy: Not very well. Actually the greenback cutthroat trout which is native east of the continental divide, was at one point, was thought to be extinct in the 1930s, so their numbers declined very rapidly as well as the Colorado River cutthroat trout. And the main reason for that was introduction of non-native species. Cutthroat trout are believed to be descendants of rainbow trout, and they can hybridize with them, and then it's now known that when brook trout and brown trout are in a stream together with the cutthroat trout, over time they'll displace the cutthroat trout. So that's considered the main reason for the decline of native cutthroat trout in Colorado.

Thomas Andrews: Do they, I mean, is that through predation or competition for spawning grounds--what's the mechanism?

Chris Kennedy: The exact mechanism is not known. We kind of believe that it's kind of a spawning strategy thing where the brook trout and the brown trout are fall spawners. So they put their eggs down into the gravel in the streams. In the fall, they overwinter, and then they pick up their development as the water warms up in the spring, whereas the cutthroat trout are spring spawners. So they, there's a stagger effect where the cutthroat are spawning later. So the brook trout and brown trout, their young will hatch earlier than the cutthroat trout, and in a stream, the biggest fish have the best feeding positions, so the very smallest fish will be the cutthroat trout young, and they'll have the worst feeding positions.

So typically you'll see that the young of both species in the fall but come the next spring, you don't see the cutthroat trout. So they believe that since the young have the worst feeding positions that they do not get fat enough to survive that winter. And it's, whatever happens, happens during the winter and really it's very tough to do research there during the winter. So the exact mechanism isn't known but that's what we believe.

Thomas Andrews: Okay. And so then, let's follow that story forward, in the 30's and the parks started making some shifts but moves toward Yellowstone cutthroats that then hybridize with the native cutthroat, and then both of those are hybridizing with rainbow trout to some extent?

Chris Kennedy: Yes.

Thomas Andrews: And then not competing particularly well to the extent that they're still competing so what's the next major events, or next nature changes in fisheries management within the Park?

Chris Kennedy: Really the next major change probably doesn't come until 1968. Through that whole period the fish management in the park was basically geared toward fishermen. They would stock fish out, and let fisherman catch them. When we get to the 1960s that's when the change occurred and they said, hey wait, we're not really following park service policy by maintaining the artificial fish populations by stocking. So what they did is they ceased stocking of fish for recreational purposes. The last stockings were in 1968 and they went to more, more geared towards native cutthroat trout. They wanted to kind of assess the fish populations. Find out what they had and then try and restore the native fish populations.

And that's basically the same management that we have today.

Thomas Andrews: Okay. And then those and so what sorts of practices or techniques were used as part of that restoration effort?

Chris Kennedy: Well, since the cutthroat trout cannot be in a stream with these other species, we have to find an area that had some kind of a fish barrier that can exclude the fish from getting back in, these non-native species, and then any fish that are above that barrier we remove using EPA approved chemicals. There's two of them that are approved for the purpose of removing fish, antimycin and rotenone. Antimycin is the one that's been used most extensively in the Park. So you would apply this into the water at very low doses and it would remove the fish

Thomas Andrews: Did it kill anything else?

Chris Kennedy: The only thing that it's been shown to have effects on is aquatic invertebrates. They've done lots of research on things like rats and dogs, and but it is effective on fish and because of that you can put it in at very low doses and then usually when the fish are not there, the aquatic invertebrates will come back very quickly.

Thomas Andrews: So you clear out the waters and then put in hatchlings?

Chris Kennedy: Yeah.

Thomas Andrews: Put in fry.

Chris Kennedy: Yeah.

Thomas Andrews: Any other efforts part of this as well in terms of creating, I mean, messing with the stream beds or anything like that?

Chris Kennedy: No.

Thomas Andrews: Okay. And then to what extent has that been successful do you think?

Chris Kennedy: There have been, I believe about 17 of those kind of projects restoration projects within the park. Most of them have been for greenback cutthroat trout on the east side seeing that's a federally now it's a federally threatened species but there have been two such projects on the west side for Colorado River cutthroat trout. That would be Timber Creek and Timber Lake and then Ptarmigan Creek and Bench Lake which actually is a very interesting story. When my supervisor, Bruce Rosenlund, decided to do that project, there really wasn't a good source for Colorado River cutthroat trout within Colorado. But he had heard about a population of Colorado River cutthroat trout that were in the Sierra Nevada mountains out in California.

So he got a hold of the biologist that was responsible for that population and did a little taxonomy work, and they show that they were really pretty good Colorado River cutthroats. So what they did is they had the State of California go up to these lakes, collect the fish and then in one day they helicoptered them from those lakes to Bishop, California. They put them on a plane. Flew them to Kremmling, Colorado. Put them on a truck. Drove them within Rocky Mountain National Park. Put them on another helicopter and then stocked Bench Lake and Ptarmigan Creek, and I believe they only lost two fish doing it.

Thomas Andrews: Where'd the California fish come from?

Chris Kennedy: In the 1930s the State of California and State of Colorado did a fish swap that, we, the State of Colorado got golden trout which are only found in California and then we gave them Colorado River cutthroat trout. And the Fish Hatchery Manager when he got those fish, knew that they were unique so he put them in a high up in the mountains in a fishless area, and so they didn't, as far as I know, they didn't stock anything else up in there after they did that stocking.

Thomas Andrews: And then so I know there's been some recent genetic studies that have raised a lot of concerns about what's what, essentially?

Chris Kennedy: Yes.

Thomas Andrews: And so what's the confidence level at this point that the Colorado River cutthroats within the park are actually Colorado cutthroats?

Chris Kennedy: It's high confidence for that. Very low confidence that the greenback cutthroat trout within the Park are greenbacks.

Thomas Andrews: Okay. So it's more sort of that way then?

Chris Kennedy: Yeah.

Thomas Andrews: That the biggest question is the trueness of the greenbacks?

Chris Kennedy: Yes. Yes. Like I previously said most of the cutthroat trout egg collecting places were on the western slope within the historic range of the Colorado River cutthroat trout with Trappers Lake and Grand Mesa Lakes being the biggest producers. So those got distributed all throughout the state. And so it appears that most of the cutthroat trout population within the state right now are Colorado River cutthroat and the source was either one of those two areas, Grand Mesa Lakes or Trappers Lake.

Thomas Andrews: Okay. And what have been the failures, the shortcomings of the restoration efforts?

Chris Kennedy: Well, we've had reinvasions of a few of the populations and now . . .

Thomas Andrews: Like brookies coming past the barriers?

Chris Kennedy: Yeah, or there was not a complete removal of the brook trout, so there's three areas over on the east side where brook trout are the predominant species again. So that's probably the biggest issue.

Thomas Andrews: Okay. On the west side though?

Chris Kennedy: The west side, the Timber Creek and Timber Lake looks good; however, the Bench Lake and Ptarmigan Creek area we have recent genetic evidence that show that there's some Yellowstone cutthroat trout hybridization within that population so that's what was in there prior to the treatment.

Thomas Andrews: An incomplete kill, then?

Chris Kennedy: Yeah. It kind of looks that way.

Thomas Andrews: Okay. And what's the historical relationship been between U.S. Fish and Wildlife and the National Park Service and how has that relationship changed? At Rocky?

Chris Kennedy: Yeah. It really hasn't changed much. I mean the Park has always looked outside the Park Service to, for people to do the fisheries work. Starting in the late 1950s they brought in the Bureau of Fisheries to do fisheries work, and it just kind of continued and Fish and Wildlife Service has, our office, has been working and doing the fisheries work within the Park since the 1970s. But it's a good relationship. We kind of both have the same goals. I mean, Fish and Wildlife, Service we're trying to restore threatened and endangered species, the native species to particular areas, and the Park Service, their management policies call for restoring native species and eliminating non-native species.

So it's a pretty good match where we can bring our expertise in, and we both meet our management guidelines.

Thomas Andrews: Okay. And what role does the state play within Park? Do they play much of any anymore?

Chris Kennedy: Not really. They're consulted on particular things, but they pretty much let the feds do their own management within federal lands.

Thomas Andrews: Okay. What are some ways in which environmental changes beyond the Kawuneeche might be affecting fish populations within the valley?

Chris Kennedy: Well, there's a lot of, you know, the Park can, there's a lot the Park can't control even though a national park is supposed to be the kind of pinnacle of land protection within the United States. They can kind of control somewhat what comes within their borders, but we're finding that there's a lot of bad stuff coming in within the precipitation. I've had to do testing for mercury on fish because, they're finding high levels of mercury coming in the precipitation.

Thomas Andrews: Is that from coal generating plants?

Chris Kennedy: Yeah, but it's also it's something that can stay suspended in the air for over a year so it could be factories, volcanic eruptions put it up in the air.

Thomas Andrews: So it can be really long distance then?

Chris Kennedy: Yeah. So they're finding it at levels that had produced fish consumption advisories in other parts of the country, but when we tested the fish, the trout were the highest trout mercury concentrations were half of the EPA level for human consumption. So it wasn't a concern at that point but it's something we'll have to continue to monitor. More recently we've been testing fish for endocrine disruptors. It's a suite of chemicals that mimic endocrines, and they found evidence of that within the park within Rocky, it was part of a bigger PS study where they looked at fish in Glacier National Park and some parks in California in Washington and Alaska. And the highest instances they found here in the Rocky.

Thomas Andrews: And is there any sort of impact of nitrogen deposition and acidification.

Chris Kennedy: Not currently. But it's definitely is a threat as pH levels change that will affect the fish, and we could lose fish populations at some of the higher lakes and streams because of that.

Thomas Andrews: Okay. What about environmental changes within the valley? I mean, I'm wondering how things like the Grand Ditch breach or the diversion of water through the Grand Ditch, homesteading How might ... any sense of how those might have affected the fish over time?

Chris Kennedy: Sure, diverting water obviously is going to decrease the amount of habitat for the fish. The breach, the Grand Ditch breach is something that we've been monitoring. We've been doing fish surveys up in that area, and there was a lot of sediment deposition up there. And like I also mentioned with

the beaver, it takes away their spawning habitat so those are a couple of areas, that the fish can be affected by those.

Thomas Andrews: Okay. Have you seen any sign of long term impacts from mining in the valley on fish or?

Chris Kennedy: No. There's still an abundance of fish within the Colorado River, and we have about the five trent sights that we monitor the fish throughout the whole length of the valley, and there's still an abundance of fish within the Colorado River.

Thomas Andrews: Okay. What are the, what do you see as the major studies, the most important documents on fish history in the Park over time?

Chris Kennedy: There's probably no major ones, it's just looking at all the annual reports and just, there's a lot of little smaller things. No big one. Probably the most comprehensive is the one that our office put out in 2001. That was kind of a summary of a lot of the fish management.

Thomas Andrews: This is the management report?

Chris Kennedy: Yes, which we're hoping will be probably next winter we will update that. And even put in more of the history that I've found since 2001, since that report came out.

Thomas Andrews: Okay. And what have I been missing? What are the things you think are really important that I haven't asked about at this point?

Chris Kennedy: Well, I think the big issue with the park management is that for up until 1968 that it was the management was fishing based. You think of a national park as something that's supposed to be protected and maintained in its natural state but apparently that didn't apply to fisheries management because it was just a continual putting fish in, taking fish out. That's not really a natural thing and because of that by 1968 when the park changed the policy, they had a park full of non-native fish and in places that they historically weren't present. Like I said, there's waterfalls and cascades formed barriers so most of the park was historically fishless. But in this desire to placate fishermen, they stocked all these fishless waters and that has impacted everything else within the aquatic systems.

Thomas Andrews: Has there been any efforts to restore invertebrate populations in lakes where those got trashed?

Chris Kennedy: Well, it's hard to restore something when you don't know what the historic conditions were.

Thomas Andrews: So is the general preference then not to restore if you don't know, what, I mean, to leave it be in hope that something returns on its own?

Chris Kennedy: Well, that's something that has been discussed. In general the park policy is to try and restore things to the way that they were pre-European settlement. So for the most part, we believe that most of the park was historically fishless. And that has been discussed. Once that taxonomy issue is resolved, we'll probably get back into doing, reassessing the fish management in the park and doing management plans.

Thomas Andrews: Okay. Anything else I haven't touched upon?

Chris Kennedy: Nothing that I can think of.

Thomas Andrews: Okay. Let me just ask one more question related to what you just said. Why do you think, you see this, you see this, like in elk management, or just more broadly with fauna, with *Fauna No. 1*, you see the rise of a more ecologically oriented mindset in the parks in the 1930s, and maybe that's where you get this little moment of awareness that we're stocking a lot of fish that maybe don't belong here, but then they turn away from it. So why do you think it took so long for that management priority to shift from keeping tourists happy to preserving or restoring the ecology?

Chris Kennedy: Well, the Park also is there for recreation, and that's probably a big part of it where they felt that they needed to keep people happy and fishermen happy, and so it was probably in the case of fish the desire to provide fishing opportunities and recreation to people kind of overrode the preservation of native species.

Thomas Andrews: Okay. Yeah, well I think that's very, very helpful. So I'm going to stop it. Thanks very much, Chris.

[End of Audio]

Duration: 43 minutes

Interview with Jason Sibold
Nov. 22, 2010, Fort Collins, Colorado
Original audio file deposited at RMNP Archives

Thomas Andrews: This is Thomas Andrews with Jason Sibold, Monday, November 22nd, 2010 in Fort Collins. ... Okay. We are here at Fort Collins with Jason Sibold. So, this is Thomas Andrews. We're going to do a little interview on, mostly on fire history but we'll go into related topics as well.

Jason Sibold: Okay.

Thomas Andrews: Okay. So let's start with this one. What ways does the Kawuneeche's fire history strike you as unusual or exceptional? What's sort of interesting about the valley's fire history?

Jason Sibold: Yeah. I guess the big broad aspect of fire history in the Kawuneeche is that fire in that part of the park is either, it's kind of an on or off switch. It's either a big fire year, or there is absolutely no fire. There's no in between. So either huge stand replacing fires or absolutely nothing, and you have long periods of nothing in between, and then these massive landscape resetting kind of events, which is, you know, just an interesting kind of overall scenario that you reset the entire landscape and then go a long time and then, you know, nothing much happens. And then another massive events, so kind of these very large scale, dramatic events, and probably then--also just the legacies of these events as far as through time you have, after one of these events, the consequences in terms of species composition, the size of patches, age of trees etcetera00that these things influence other processes in the forest and in the valley in general for, you know, one or two centuries until the next large event.

Thomas Andrews: Okay. And is the pattern of just stand replacing fires, is the Kawuneeche is that pretty much typical of subalpine forests in this part of the Rockies or ...?

Jason Sibold: Yes. It's typical of subalpine forests in this part of the Rockies. Not typical of much of the east side of the northern front range though. So the east side of the front range, and if you want to compare it to Rocky Mountain National Park, east side fires are more frequent. They're smaller on the east. They are generally high severity, but you probably have larger areas on the east side where you kind of have some lower severity. Not extensive surface fires by any means, but areas where the edge of the fire becomes, you know, of surface fire for maybe 50 to 100 meters whereas on the west side, those areas, the boundaries are very for most part very clear. It's either standard replacing or it's nothing.

Thomas Andrews: And is that do you attribute that to the higher precipitation on the west side? Different topography? Different history?

Jason Sibold: Yeah, so it's probably a combination of things. Topography is not quite as dissected as the east side, so you don't have as many rocky ridge lines and things to stop fire. So that's probably one factor. Yeah, it's generally weather, so you have less frequent kind of high fire weather conditions. So you build up fuel when it is dry enough there you cross some major threshold and the entire landscape is likely flammable so fires can spread.

Another interesting this is that a unique aspect at Kawuneeche that helps influence this is that you have that high wet valley, so I'm even thinking back to my field work there in 2002 which was an extreme drought year, the Kawuneeche trying to walk out in that valley, it was still pretty wet. You could not walk out there without getting your boots wet even though we were in this exceptional drought. Everything else was just crisp and dry and ready to burn and that valley was still wet. So that valley would have stopped fire spread from adjacent areas and kind of been a buffer to fire spread from ranges to the west or even to the south or southwest. So having Grand Lake and then this high wet valley buffered it from fire's spread.

In contrast, other areas if you go over to the Park Range further west which is a similar climate scenario but has more kind of contiguous burnable terrain, you could have much larger fires and fire spread for much longer distance. So I think that that helped protect it, and if we go to the east side of the Continental Divide in the Park, the subalpine forests are adjacent to montane or at least upper montane which dries out faster in general, so you could have had this ecological neighborhood effect of fire spread from the montane.

It might not have been the greatest year, the driest year for fire in subalpine but if you have a fire that starts in the montane which means a much lower threshold of drought for fire to occur and spread, and it moves upslope which fire naturally does, it pre-heats fuels and it could have kind of burned up into these small patches in the subalpine.

But if we look at fire dates from the east side of the divide from the subalpine to montane, yeah, they line up so there are some cases or some strong arguments that these fires are spreading from the montane whereas in Kawuneeche it's a completely unique scenario. You've got these natural fire breaks of Grand Lane and a high wet valley.

Thomas Andrews: So, on the valley floor then, I mean, you don't have any reason to believe that the valley floor was ever fired by Indian peoples through that sort of thing?

Jason Sibold: Not that I know of. I mean, I don't have any data on that because I'm all tree ring based.

Thomas Andrews: You don't see like higher incidences of fire lower down or something, on the fringe infringe.

Jason Sibold: Not at all. And I think that valley was probably even wetter and before recent times.

Thomas Andrews: Yeah, higher water table.

Jason Sibold: Yeah, exactly. So in comparable droughts in the late 1800s, I would imagine that it was even a wetter place than it is today.

Thomas Andrews: Okay. And what have you been learning about the sort of relationship between the lodgepole and the spruce-fir. Are they successional? What's the scoop? What are people thinking currently about that?

Jason Sibold: Yeah, probably not successional because fires are frequent enough that you just don't have that much time for successional processes to occur on the lodgepole pine forest so I guess in the Kawuneeche and that surrounding area, it seems like it's either lodgepole or spruce fir. Most of the spruce-fir is at higher elevations, further up the valleys, and most of it actually is also, it's in contrast to other areas, you don't have kind of this smooth blending from lodgepole to spruce-fir. Often times that boundary is associated with something like a fire break, like an avalanche pathway, a steep rocky ridge line that would have stopped fires, and once you get above that most the spruce-fir on the west side on the Continental Divide is old forest or old growth, however you want to think about, that does not have any evidence of fire for maybe 800, 900, 1,000 years. So a very different scenario lodgepole, spruce-fir. There are some sites where post fire lodgepole has a mix of lodgepole and spruce fir, but for the most part it's lodgepole dominated, and a fire is going to, you know, without kind of management or intervention a fire going to occur before you're going to have succession to spruce or anything like that.

Thomas Andrews: Okay. And what sorts of roles there's so many disturbances maybe we should just go through them kind of one by one. What is the longer term history of mountain pine beetle or spruce beetle on the west side? What have you been learning about that?

Jason Sibold: Let's see I guess we could point really quickly to fire and say Phil ?? who's now at the University of Idaho has worked on it for a little bit. Hasn't been published yet, but from lake sediments he's suggesting that

fire has been the dominant disturbance for thousands of years at least. Ah mountain pine beetle ...

Thomas Andrews: These are Grand Lake sediments or?

Jason Sibold: No. He actually cored some smaller lakes like Chickaree Lake. I don't know if you it's basically a closed pond.

Thomas Andrews: Okay.

Jason Sibold: It's on the map, but I don't think, yeah, I don't think too many people know about it. I steered him towards that because it's surrounded by lodgepole, and I thought it might be a legitimate site. He was very cautious because of the position in the landscape, but it's turned out to be a great lake. And I think.

Thomas Andrews: Is it varved or?

Jason Sibold: I believe so. I don't remember the exact details of the lake. I know that he's getting very high temporal resolution data from Chickaree Lake. So it's a little closed drainage and very small catchment. So and I think he has a couple more lakes that are similar to that and maybe Verna or something up higher. But so fire looks like it's been a dominant process for thousands of years. As far as mountain pine beetle, trying to go back and reconstruct mountain pine beetle outbreaks, we have records for the 1900s. We know there was a small 70s outbreak. It seems like there was a 30s outbreak, before that we don't know. So tree ring records are really limited to reconstruct mountain pine needle because they kill the tree.

Thomas Andrews: Right.

Jason Sibold: Lodgepole unlike spruce and some other species, once it's attacked by a beetle, it rots fairly quickly plus we have fires that wipe out evidence of earlier outbreaks. I have tried to reconstruct outbreaks for the west side Kawuneeche area, and there was probably an outbreak in the 1890s but nothing certain. So we really don't have a good handle on how frequently these would have occurred.

Thomas Andrews: Yeah.

Jason Sibold: It's a natural part of the system probably looking at our current outbreak, though, there's no indication that the extent and severity has occurred at any time in the past.

At the same time, we don't have proof that it didn't occur. It just seems a little unlikely which is another kind of legacy of settlement era fires in the

fire history context of saying the ecological legacies or large, kind of landscape resetting disturbance events if you move forward to today we have a large portion of landscape that's all in the same age class, all susceptible to mountain pine beetle, and it just facilitates kind of, the extent and severity of the current outbreak.

Thomas Andrews: Does huge increase in fire from sort of about 1850 to the 1890s?

Jason Sibold: 1851 on the west side to about 1901, 1902.

Thomas Andrews: Okay. And there from your, either from scientific evidence or from sort of a hunch, what do you think the relative importance of different factors in explaining that as and a period pretty serious, some serious droughts. That's also a period where there must have been increased ignition ... periods.

Jason Sibold: Oh definitely. And we know.

Thomas Andrews: Yeah, and you see that across the region.

Jason Sibold: Yeah, 1879 Jack Straw fire I guess it was a supposedly a miner ignited fire. I don't remember all the details of that, but in 1879 from what I understand there was very low snowpack even in January and February and you had fires burning even in the middle of winter. It's a really exceptional kind of 1879, 1880 exceptional drought conditions. So that's a unique period in terms of most of the southern Rockies had gone through, and large areas of the western North America had gone through, this period of quite extensive burning from about the mid 1600s to the 1770s, and then we go through this very unique period of time from about 1780, 1790 to 1840, 1850 with very little fire. Not just in Kawuneeche, but West wide.

And it sets a similar scenario to what we have today. You have relatively older forests, contiguous forest, fuels, and etcetera and then you switch into these days of very frequent high severity drought from 1850, 51 to the early 1900s. So a 50, 60 year period of frequent drought and so you have drought, plenty of fuel, and a lot of ignitions. We know that settlers were coming in. Lots of reasons to burn, clear the land, facilitate cutting trees, facilitate movement, probably some social conflict in Native Americans burning each other's land etcetera. So and of course accidental ignitions, you know. The drunk miner went off to the latrine in the middle of the night with lantern and slipped and next thing you know you've got a wildfire or just careless fire management in terms of cooking fires or something.

Lots of ignitions either intentional or accidental. I'm sure it did not hurt things especially in the context of natural ignitions tend to be, lightning tends to coincide with things like rain whereas people can time their ignition to dry windy conditions that might not be conducive to convection and lightning and rain. So people are not, human ignitions are not constrained by atmospheric conditions that you, are required to have a lightning strike and ignition. Yeah, so as far as what the importance was, I don't know. I find it hard to believe that all of those fires were just natural. If they were, we would probably be seeing many more fires in the last 15 years. Each summer here have been, what we've seen, have been, what we actually do see, because we have kind of climate conditions in terms of fairly high frequency drought, there's a lot of fuel on the landscape. It's drying out. Why don't we have more massive fires like they did in that period?

Thomas Andrews: And that brings it up to, a question I wanted to ask you about some of your conclusions about fire suppression and the era of fire suppression begins, I think some people say with the Park's creation, other people saying little bit later maybe in the 20s, but and so many conclusions you've said that you can't, I mean, the 20th century does not look like it's outside the historic range of variability. But at the same time, that doesn't mean that fire suppression hasn't had important consequences. So I'm wondering what how you kind pick those apart?

Jason Sibold: Yeah, so 20th century I guess as far as the timing of when fire suppression would have started to have influences on fire occurrence and spread, yeah, if they started in the 20s or the 30s or whenever they had some sort of effort to put out fires. The landscape being so young was relatively, I don't want to say fire proof, because anything can burn if it's dry enough. But we know that younger, even lodgepole pine, younger lodgepole pine stands are much more resistant to fire or less prone to burn. So I find it hard to believe that suppression efforts would have had a major influence until maybe the 1950s or something. It was also a period of time when it didn't have that many high severity droughts in the early part of the century.

Thomas Andrews: When you get to the big droughts in the 50's.

Jason Sibold: 50's maybe, yeah, but you have the infusion of the post war or the World War II technology, you know, in detection and organization, and it's not just technology. I think it's probably also that kind of organization of hey, this is how we structure things. Go about systematically putting out fires, so really interesting kind of cultural change as well. Yeah, they could have started having an influence in the 1950s. As far as definitively saying anything about the impacts of fire suppression, they've put out fires. Yeah, the landscape is not outside of historic range variability since

the mid 1600s which is we should say, a difficult task to reconstruct, but it's a very short timeframe in reality to look at returning from 1650 or something to present.

And say this is the historic variability. It's a very small window of variability especially on the west side basically a couple fire cycles. So, yeah, while it's safe to say I think that they haven't pushed the landscape outside of historic range of variability, we're probably on the cusp of being outside of that range of variability and undoubtedly they have put out fires that otherwise would have burned particularly in the last decade. We know that they had ignitions during hot, dry conditions that would have probably burned large areas so, yeah, it's not outside of HRV but, yeah, it has influenced the landscape that we see today which obviously has implications for the pine beetle outbreak.

Thomas Andrews: So and what does, it's been a little while since I read it, but what does, is Carl Hess sort of on the right track then in his diatribe against fire suppression in the park or what does he miss? I'm not sure. It may have been a while since you read that, as well. *Rocky Times in Rocky Mountain*.

Jason Sibold: Yeah. I think that it's safe to say that probably especially hindsight being so such a wonderful thing that now with the mountain pine beetle outbreak it's a pretty safe thing to say. Yeah, they should have let some fires burn, and they should have broken up this landscape. It would have been much more resistant to the current outbreak. It would have created more habitat diversity, etcetera. At the same time, I think you have to realize the Park in a very difficult geographic position in terms of so many houses and towns and valuable property around the border the park, and probably the one big event was the 1978 [inaudible] fire which burned down slope. It was on the east side of the park, but it influenced fire policy park wide.

They had instituted a let burn policy in '72 or '73. Then they had their first big fire, and it almost destroys Allenspark and this was an unusual fire. It started up high in some very old spruce-fir burned down slope and it smoldered for a month or more, and then it down slope wind took it. And it took off so that's greatly influencing Park policy. I think that it's pretty clear that for the over ten years that I've been working in the Park, the managers are aware of the impacts of extinguishing ignitions, and then I think they would almost 100 percent of them would probably like to see more fire in the park, but they have a very difficult kind of position as far as management scenario.

So, what do you do? The let burn areas are up high in forests that I can't detect any history of fire in. So those are the only places that are deemed safe for fires to occur. Yeah, I think it's, I don't know of too maybe

people who would not argue, park managers included, they're very aware of fire ecology and what's going on even before the pine beetle outbreak, probably that it would benefit the park. It would benefit the forest landscape, flora, fauna, everything. But you're constrained by a lot of expensive structures on the edge of the park and kind of a difficult--very difficult—scenario to be in. I'm glad I research it. I don't manage it.

Thomas Andrews: Is there, would you say that the forests on the west side are presently unnatural in some respect?

Jason Sibold: Before the pine beetle outbreak, I would say no. They're, these are mostly at least the lower elevations are even age lodgepole pine. It's a completely natural forest type. It's not like in this region that fire suppression changes species composition, tree densities, number of cohorts. It doesn't do any of that.

Thomas Andrews: It isn't really the same story like the Blue Mountains for instance?

Jason Sibold: Yeah, exactly, or Arizona, New Mexico, even montane forests in some parts of Colorado. It's not like you have Douglas fir invading and the density increases dramatically and fuels increase and fire changes from low severity or high severity or from small patchy fires to more extensive fires. So in that case, it wasn't, it didn't cause any kind of forest change, but I think at this point we do have very unique landscape in terms of the post beetle landscape. We're moving towards multi-cohort stands with new trees coming in, with the canopy opening up, a lot more subalpine fir at lower elevations. It's probably a likely scenario of what we're looking at as a result.

Thomas Andrews: What's behind that?

Jason Sibold: I'm not really exactly sure. I just know from the 70s outbreak that I studied, stands that were affected by the 70s outbreak, a lot of those stands had subalpine fir come in following the outbreak. You're opening up a canopy, if it's severe enough can provide opportunities for lodgepole to regenerate. But lodgepole definitely prefers post fire sites so between the closed cone and not having very mineral soil, not having the canopy completely removed, it's not favoring lodgepole to come back.

:

Even if it did have a new cohort of lodgepole coming in moving from a single cohort lodgepole stand to a two cohort lodgepole stand, that's a very unique thing, border line unnatural scenario in terms of the structure of the fuels and the habitat, etcetera. But if you're converting lot of pure lodgepole to mix of lodgepole with a second cohort coming in, and that second cohort is a mix of probably lodgepole, subalpine fir and some Englemann spruce. Subalpine fir produces a lot of seed, it travels far and

wide. So probably a combination of that with 150 years or 110 years depending on the site without fire, it started to gain a foothold in a lot of these sites and it's not like we're looking at massive succession without the mountain pine beetle outbreak, but it was there so that helped it out.

And now you're opening up resources, light, water, nutrients, and it's taking advantage of it. So the pine beetle outbreak is certainly speeding succession and kind of facilitating probably the succession to fir or mixed subalpine fir landscape. So that's very meek. We don't know what the ramifications are of that, but just climate change, drought stress, can the subalpine fir survive at lower elevations if we have a five year drought or something. What happens if you lose a lot of your lodgepole pine and then you have a high severity fire, or if you have a stand dominated by subalpine fir which is not fire resistant at all? And it can't, it doesn't have cones to survive fires either.

Thomas Andrews: So they's sort of catastrophic possibilities then?

Jason Sibold: Yeah, I think it's within the range of possibilities. There's still a lot of lodgepole pine on the landscape even in highly, high mortality stands so I think it's probably okay, but none the less it's changing fire severity. What if there's more fuel at the forest floor level? It's possible that you have a more intense fire at soil level that changes the kind of the post fire site which could have ramifications. These are big questions that we can basically sit around and hypothesize about, and it will have an influence if it's important. If it's significant, if it results in a different post fire site, I don't know.

Thomas Andrews: Let's shift from the future to the more distant past. When did the forests on the west side adopt a recognizably modern form, do you think, and what's their deeper history to the extent that you've been able to figure it out.

Jason Sibold: Yeah, I don't know.

Thomas Andrews: When would it be safe to say that those are established?

Jason Sibold: I think it's probably safe to say that for thousands of years, 8,000 years or something we've had kind of this scenario that we see there now. I'm sure that the relative position of spruce and fir lodgepole has changed through that time.

Thomas Andrews: The treelines going up and down.

Jason Sibold: But I think that you've probably seen the movement of lodgepole and spruce-fir into this area for thousands of years. It'd be interesting to look at Phil's record and see what he has.

Thomas Andrews: Is he looking at pollen?

Jason Sibold: He's mostly charcoal but I think that he has some lakes where he'll look at pollen. I'm not sure of his exact study design. I guess one interesting thing is that there is some, one kind of more questionable, forest type, is this idea of there's some ponderosa pine and some douglas fir at only one site that I know of in the park in the Park, in the Kawuneeche area, in the North Inlet. And in all of Middle Park I only know of one other ponderosa pine site, so where did that come from? How did it get there? Things obviously were moving up the Colorado River drainage, but why didn't more of that come in and why are they kind of these little legacy stands or something. I'm not really sure.

Thomas Andrews: Okay.

Jason Sibold: I don't think there's any indication that in the past few thousand years that we had extensive ponderosa pine in that area, but how did these two stands get there? They're kind of a unique species perhaps. As common as they are on the east side of the divide it's interesting to think how they are over there.

Thomas Andrews: I guess let's move along the same lines. What are the dynamics with sort of the minor tree species or whatever you want to call them on the west side? The aspen, the limber pine.

Jason Sibold: Yes. Aspens just not a very common species on the west side. It is there. Why don't we have more aspen right now is a really good question.

Thomas Andrews: Do you have the sense that that's declined over the 20th century? I've got little bits and pieces that people maybe think it has, but.

Jason Sibold: Yeah, maybe at a broad special scale outside of the Kawuneeche, if we just say in the southern Rockies or Colorado in general, I think it's safe to say that it aspen extent has declined at least in some areas although there are some studies within Colorado by Dominic Kulakowsky and Tom Veblen that show that there's actually more aspen cover today than there was in the late 1800s. Aspen likes fire. So we may have been in the 1940's, 50's, 60's seeing this, these extensive aspen patches. That could have very likely just been a consequence or a result of that interaction in the late 1800s.

Thomas Andrews: Just the maturation of those?

Jason Sibold: Yeah. You've got drought. You've got lots of ignitions, etcetera and aspen live for 100, 120 years or so, and then they start dying out. Some of these stands replaced themselves. Some of them get converted to other species, so I guess the interesting thing in the Kawuneeche is that it's not like, wow, we see these extensive aspen stands that are going out now. They're apparently, even a hundred years ago, there weren't extensive aspen stands. I don't think, unlike the east side of the Park, that you could blame this on elk. I just don't think they were there for whatever reason. And who knows what the real reason was, but they're just not that abundant there.

The limber pine not super abundant on the west side of Rocky Mountain, but there are some, and not up at tree line necessarily--like you'll see some areas just east of the Continental Divide along Trail Ridge Road. You don't see them up in those kind of high valley scenarios but lower down just above the valley floor maybe 100 meters or something off the valley floor. It's kind of rocky exposed windy, dry south facing or southwest facing sites. I don't know their history. I know that like ponderosa on the west side they're mostly gone from the pine beetle outbreak. We don't have a whole lot of young individuals.

Thomas Andrews: From this present outbreak?

Jason Sibold: Yeah, from this present outbreak so I think in the North Inlet we found somewhere around six individuals and I think they're all dead. There may be a couple of seedlings. As far as, if a seedling that's 20 centimeters tall will recruit to the canopy and survive. I don't know, so it's kind of a tenuous situation with limber right now.

Thomas Andrews: Okay. What sorts of connections are there between fire and insect outbreaks in these kinds of forests or in the west side in particular in the past?

Jason Sibold: Fire and insect?

Thomas Andrews: Yeah. Are they more less sort of disconnected kinds of disturbance?

Jason Sibold: Yeah, so I guess, you asked me before and I didn't mention. Obviously there's spruce beetle effects Englemann spruce. I think the last big outbreak in the park was in 1930s or 40s. Maybe some smaller outbreaks here and there. Definitely other outbreaks, and we sampled when I was in graduate school we sampled for those things, and I know that there are a couple of maybe honors theses looking at that. I could get that some of those outbreak dates for you if you're interested. As far as the relationship between fire and spruce beetle outbreaks, probably not a whole lot of

relationship in the Park just because the spruce forests are generally very old. So the susceptibility there is not dictated by, well the trees all of a sudden are now 850 years instead of 800 years old.

They've moved into a new susceptibility category. Once you're a mature large spruce tree, you're susceptible to spruce beetle so there's not a link there. That would be just a pure kind of drought driven event as far as facilitating beetle population growth and stressing trees so they can't resist the beetles as well. There's a clearer link between fire history and pine beetle though where you need trees of a certain diameter to be susceptible to mountain pine beetles and that may be changing with this current outbreak and this current climate condition. We're seeing things that they're breaking past rules or unwritten rules, you know, the size of trees ... that they'll attack, but so even though there's generally a weak relationship between the age of the tree and diameter of the tree, in general older trees are larger diameter.

So the larger they are, the more susceptible they are to mountain pine beetle and somewhere at least in this past this past outbreak and some were around 17, 18, 19 centimeters diameter at breast height, they become very susceptible, so we have a lot of the landscape after 100 to 160 years of no fire. We have a lot of landscape of, that have stands of trees in that diameter class, or greater than that diameter threshold, so we have a lot of susceptible landscape out there.

The other insect that could be important is there some Doug fir on the west side park in the Kawuneeche, and it's a totally different scenario in terms of, it's a defoliator and it's actually favored by probably wetter than average conditions. And we see that last defoliation--I'm in the process of reconstructing the defoliations for that side on the North Inlet right now—last defoliation was 1980s. Looks like there was a strong defoliation in the 1840s, 1730s to 50s somewhere in there, so going back in time. Not as frequent of defoliation events as probably on the east side, which is kind of curious, but none the less, defoliations and those trees, the Doug fir for the most part, come back after the defoliations even if they're defoliated. Over a number of years they will kind of resprout and come back to life. So it won't necessarily kill them. So not so much of a relationship there with fire history and susceptibility.

Thomas Andrews: Okay. What about on the other side, after outbreaks?

Jason Sibold: After outbreaks I think that we see the general political and kind of general public wisdom is if stuff's dead, it's more likely to burn. That might be true in that kind of red needle stage, but it's looking more and more and there's more evidence just came out last week Monica Turner and Bill Romme and others have a paper from Yellowstone where they're

modeling forced fuels. Actually you're probably less likely to have a fire following an outbreak. And when it comes down to it, fires are high severity in this forest type anyway so you're probably not going to switch to where, or you can't switch from low severity to high severity because of the outbreak so even if that could happen, it's not changing anything. Yeah, so it's a little curious.

It doesn't make sense. Once the fine fuels fall to the forest floor, there's no, it doesn't make any sense that you're at a higher fire hazard. And if we really get down to it, it's all of those arguments of beetles potentially influencing and driving fire ignore the reality that fire in the subalpine is driven by drought. Not fuels. This is not the southwest. We are not limited by fuels. There is enough fuel. If it's green or red or brown whatever, if it's dry enough it will burn. It doesn't matter. When those green needles dry out relatively quick, and they actually have more flammable chemicals in them than brown needles, so if things are dry, it's going to burn.

It's not dependent on some change in fuels. So it's the big thing to think about in all of the scenarios is that: Fuels are not important. It's drought, drought, drought.

Thomas Andrews: Right. Yeah, in a couple of your papers where you really questioned the value of thinning and also talked about the importance of education, it's interesting how some of these things seem to fly in the face of common sense. Common sense is no different than any other kind of sense. Right?

Jason Sibold: These thinning projects, to I guess to give the managers break. If it was a moderate drought scenario fire, then those thinned areas probably would allow that. But in reality, if a fire really gets going if you have 15,000 trees per hectare or 7,000 trees per hectare. And you know the Hayman fire there were flame lengths of hundreds of feet across.

Thomas Andrews: I drove past that thing on, this is kind of an aside, but I drove past that in think on the second day or the third day. Unbelievable, unbelievable just the convection. That thing was 30, it was a good 30,000 feet high. I think it was the second day. I mean and I was probably ten or 15 miles away, and it was just, it was like a massive thunderhead. It was fully creating its own weather. It was amazing.

Jason Sibold: So you can imagine if you thin out half the trees. And one consequence, another consequence of that and

Thomas Andrews: What was that thing burning at 1,200 degrees or something?

Jason Sibold: I have no idea. I actually drove through south park on the second or third day as well, and I just couldn't believe it. at night. You know, as an undergrad, I'd done fire history where under a guy name Joe Donogan who was doing his PhD at the time in that area. And it was pretty clear. We saw from west side of South Park, east side South Park, south side, and there were certain fire years that hey everything burned and hey, you've got to be ready for a scenario where of this entire region is one fire, so it wasn't outside of anything that used to happen, but it was impressive to see none the less. Just one other side note on the thinning is at least on the west side on the boundary of the park, the thinning because they thinned out smaller diameter trees, thinning increases the severity of mountain pine beetle outbreak.

Thomas Andrews: Oh really.

Jason Sibold: Yeah.

Thomas Andrews: When was that thinning conducted?

Jason Sibold: A lot of the thinning on the west side close to Grand Lake, kind of those communities right around the edge of the park. I think they were thinned about the year 2000, '99, 2000, 2001.

Thomas Andrews: Okay.

Jason Sibold: And there were some perspectives that, hey, if we thinned out lodgepole pine, it would give these trees a boost, more moisture etcetera. They'd be more resistant to mountain pine beetle, and that did not play out. They were actually more susceptible.

Thomas Andrews: Their regeneration?

Jason Sibold: Yes. You maybe you see ten to 20 percent higher severity or mortality amongst stands and thin stands than versus comparable thin stands so stands that same age, same kind of original density, tree sizes and everything. So you get this added bonus severity because you left the large susceptible trees.

Thomas Andrews: Okay. Do you see any, and this may not have been a question that you've asked. I'm just curious. Do you see management boundaries? Do you see the effect of old management boundaries in the forests, in particular I'm interested in the Never Summer addition in 1930 or some of the other later additions, I mean do the forests on the west side, did you see some sort of markers of this area was under, Forest Service in this area was under park service?

Jason Sibold: I have not.

Thomas Andrews: When you walk around it, it's not something you can . . .

Jason Sibold: No, I haven't.

Thomas Andrews: Are you aware of much logging having been signs of ATC and whatever?

Jason Sibold: There wasn't a whole lot of logging that I see. I know lower down on the Kawuneeche, you know closer to Grand Lake.

Thomas Andrews: There's one big stretch in there, straight roads and stuff, look like drag roads. I haven't figured out what the deal is with those.

Jason Sibold: I'm not sure. I mean there are some areas with stumps. It's not like there were any massive clear cut areas. And then there's the occasional stump that I think was maybe a tree that was cut down by the CCC in the 30s because it was infested. And you'll see the old cans and things sitting around. There wasn't much logging. There wasn't compared to other places in Colorado I've worked so Park Range, South Park, elsewhere in the Front Range, Boulder County, over around Winter Park. It seems like everywhere you go there are test pits. Larimer County, and there are test pits in the areas of clear trees and things where miners were checking things out. And you don't, I found so few test pits in the Park. It's really astonishing.

So it just seems like early on it was recognized as either not being, not having a lot of valuable minerals. Or I'm sure you know a lot more about this history than I do, or just, hey, this is a place that we should treat differently or whatever, but there just doesn't seem like there was a lot of prospecting. To tell you the truth, I found I think I found more little doomsday survival stashes in the Park.

Thomas Andrews: Oh really.

Jason Sibold: Yeah, there's some places in the outside of the Kawuneeche Valley that I've run across somebody's little stash of tarps and [illeg.].

Thomas Andrews: When the end times come?

Jason Sibold: I guess. Cans of food or maybe it's somebody who's going up illegally and hunting at times or something. There were a couple that I ran into in Paradise Park. Do you know where that is?

Thomas Andrews: No.

Jason Sibold: If you go up the east inlet and instead of going straight up the east inlet, you turn to the south and it's kind of, there isn't a trail and you're not actually supposed to go in there unless you're doing research or something. I was never given permission to camp in there. So we'd do these long day trips from a campsite called Camp Cats Lair and walk into Paradise Park, and we found some interesting little stashes, and I don't know if, what it was. That's also interestingly one of the places where they extinguished a fire that probably had potential to really burn is up in Paradise Park which is, you know, as the crow flies, not that far from Grand Lake, but as fire spread goes, it was light years away from Grand Park or Grand Lake, excuse me.

But they put it out, made considerable effort to put it out. Cut down a lot of trees and . . .

Thomas Andrews: When was that?

Jason Sibold: I don't remember the date of that. I'm sure it's in park records, but that's the largest area of cut trees outside of the thinning project that I've ever seen. And then I have found individual trees that were obviously hit by lightning and were smoldering. They've gone in and cut down a few trees around them and dug a perimeter so management legacies with lots of flagging and ...

Thomas Andrews: This is probably another area where you probably haven't seen much impact, but just curious whether you've seen much

[End of Audio]

Duration: 49 minutes