

Project Summary

Rocky Mountains Cooperative Ecosystem Studies Unit

Project Title: Campsite Monitoring Analysis and Protocol Development for Glacier Bay National Park

Type of Project: Research
Discipline: Social/Interdisciplinary
Funding Agency: National Park Service
Other Partners/Cooperators: Utah State University
Effective Dates: 4/15/2012 - 12/31/2013
Funding Amount: \$20,866

Investigators and Agency Representative:

NPS Contact: Lewis Sharman, Research Coordinator, Glacier Bay National Park & Preserve, PO Box 140, Gustavus, AK 99826, 907-697-2623, lewis_sharman@nps.gov

Investigator: Christopher Monz, Associate Professor, Department of Environment and Society, Utah State University, Logan, UT 84322-4105, 435-797-2544, Chris.monz@usu.edu

Project Abstract: Given these outdoor recreation trends and concerns in wildland use, managers of protected areas often examine resource change due to wilderness/backcountry camping. Backcountry camping activities have the potential to affect resource conditions both intensively at the on-site scale and extensively due to site expansion and proliferation (Leung and Marion 1999, Cole 2004). Campsites are important from a managerial and visitor perspective as they serve as destinations and focal points for visitor activities, thereby creating nodes of concentrated use. While numerous studies of campsites in parks and protected areas have examined the degree to which visitor use can affect change on site conditions (e.g., Frissell 1978, Cole, 1983, Monz and Twardock 2010) repeated examination of change over long periods are more rare (Cole and Hall 1992, Marion and Cole 1996, Cole et al. 2008).

This proposed project will build on an existing program of research (Leung et al., 2011) and planning (Bacon et al., 2006) in Yosemite National Park and will have multiple components. First, visitor use patterns and densities under three scenarios of relative visitor demand (low, medium and high) will be determined via GPS tracking of visitors in selected meadow locations. Second, information from previous research will be integrated with the visitor use densities to build a spatial model estimating the degree of meadow disturbance under the above scenarios. Last, an experimental trampling study will be conducted in riparian areas to determine their tolerance to recreational use. This information will be integrated to the greatest degree possible with current Persons at One Time (PAOT) estimates in these areas to present an analysis of possible changes to resource conditions under alternative use scenarios.

Managers find campsite assessment studies useful as they often seek to minimize undesirable resource impacts, and the associated aesthetic degradation of sites in order to maintain high quality wildland experiences for visitors. Although less common, other types of campsite studies have used experimental designs to examine functional relationships such as use-impact (Cole 1995, Cole and Monz 2004a) and spatial patterns of impact (Cole and Monz 2004b). Several generalizations about campsite conditions can be drawn from this literature. First, over time on established sites, changes in the number and areal extent of impact tend to be more pronounced than changes in intensity of impact. For example, Cole and Hall (1992) studied campsites over an 11-year period in the Eagle Cap Wilderness in Oregon, USA and found campsite size increased substantially but mean vegetation cover was relatively stable. Similar results were found over a 20-year period in Grand Canyon National Park (Cole et al. 2008). Second, aggregate impact (increased number of sites and total area of disturbance) tends to increase over time and may be more of a management concern than the level of degradation at individual sites. Cole's (1993) assessment of three wilderness areas in the western U.S. found that over a 12-14 year period, the total number of sites increased substantially in each area, but degraded in resource condition quality in only one area. Finally, assessment studies suggest and experimental studies confirm that on a given site, most impact occurs at low use levels and subsequent increases in use do not tend to result in proportional increases in impact (Leung and Marion 2000, Cole and Monz 2004a, Cole et al. 2008). Overall, these findings support the importance of campsite assessment studies in informing management actions to maintain resource condition quality.

This project will address the important issue of resource impact as a consequence of dispersed camping in Glacier Bay National Park (GLBA). Glacier Bay National Park encompasses a vast wilderness of 3.2 million acres, but the majority of backcountry use occurs along the shoreline within Glacier Bay proper. Most visitors to Glacier Bay's backcountry travel by sea kayak and do most of their camping, cooking, and hiking in the relatively narrow belt of terrain between the ocean and dense upland vegetation. Some of these areas receive more use than others due to proximity to drop off locations and destinations such as tidewater glaciers, ease of access for

kayaks, flat areas for camping and often a readily available stream or other freshwater source. Moreover, the shoreline of Glacier Bay also supports the park's most productive biological communities and most active wildlife zone. The same wide beaches and flat open meadows that are most attractive to campers are also prime foraging and travel habitat for many animals and birds. It is important for park planning efforts to understand the location and condition of campsites in relationship to areas of critical resource concern and to be able to assess trends in resource conditions and ecological impacts that occur from recreation in Glacier Bay's backcountry.

Outcomes with Completion Dates:

Monitoring workshop and field work, June 2012; Final Report, April 2013

Keywords: campsite use, conditions, ecological impacts, monitoring, protocols, Glacier Bay National Park, Utah State University