

Project Summary

Rocky Mountains Cooperative Ecosystem Studies Unit

Project Title: Phase 1 GIS Mapping of Cultural, Paleoclimatic and Paleoenvironmental Landscapes in Rocky Mountain National Park

Type of Project: Technical Assistance
Discipline: Cultural Resources
Funding Agency: National Park Service
Other Partners/Cooperators: University of Northern Colorado
Effective Dates: 9/1/2011 - 12/31/2013
Funding Amount: \$11,128

Investigators and Agency Representative:

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Project Abstract: The proposed project will utilize and build upon more than a decade of related research projects by the investigators and other researchers to enhance and update existing Geographic Information System (GIS) databases and modeling projects for prehistoric and early historic archeological sites and assemble new data layers on climate change variables based on pre-existing and one new sediment coring sites and recent ice patch climate evidence. The revised cultural GIS database, natural, geological, and hydrological GIS layers, and supplemental information from ice patch research will be combined in an initial, pilot phase GIS project designed to simulate human land use patterns within the park's environmental zones from the end of the last Ice Age to early historic times. GIS simulation of human occupation and paleoclimate patterns will refine our understanding of the park's cultural history and provide proxy data for better interpreting potential effects of emerging climatic change on park environments and its modern-day human visitors and full-time residents.

Outcomes with Completion Dates:

November 1, 2011, to June 15, 2012-Assessment, update, and integration of pre-existing RMNP GIS data layers for archeology, topography (including geo-referenced NAIP aerial photo maps and DEMs), hydrology, vegetation, geology, and soils. Park and regional data on the elevation patterns of tree-line and environmental zone boundaries associated with modern and past climate parameters, including recent ice patch studies, will be used to simulate prehistoric tree-line and environmental zone boundaries and correlate them with the spatial distribution of known cultural period components of archeological sites.

June 15, 2012, to August 15, 2012-GIS layer and model-building will continue and one or more sediment cores will be taken from a pond or fen at the Forest Canyon Pass-Mount Ida Ridge cirque valley to acquire a new paleoclimate data point for the Trail Ridge geographic area, enhancing data resolution from four other studies in the Trail Ridge vicinity. Once the coring is completed, samples will be extracted and sent to a radiocarbon lab for AMS dating. Other core samples will be processed and their analysis at the UNC paleoenvironmental laboratory will be begun.

August 15, 2012, to December 31, 2012-Climate data from the Forest Canyon Pass cirque valley core will be integrated with existing paleoclimate data in the Trail Ridge area and further correlated with paleoclimate data throughout the park to build a paleoclimate change layer for the project's GIS modeling project.

December 31, 2012, to June 30, 2013-Completion of the project GIS modeling layers and construction of the integrated data GIS pilot project. The model will be tested and results reported in a formal RMNP report by June 30, 2013, with recommendations for refining the model in future research iterations.

Keywords: GIS, database, cultural resources, climate change, Rocky Mountain National, University of Northern Colorado,