

## **Project Summary**

### **Rocky Mountains Cooperative Ecosystem Studies Unit**

**Project Title:** Elk and bison ecological modeling in the Great Sand Dunes complex of lands; estimates of carrying capacity under various management scenarios

**Discipline:** Natural Resources

**Type of Project:** Research

**Funding Agency:** National Park Service

**Other Partners/Cooperators:** University of Colorado at Boulder

**Effective Dates:** 6/1/2007 - 8/15/2009

**Funding Amount:** \$40,000

**Investigators and Agency Representative:**

NPS Contact: Fred Bunch, Great Sand Dunes NP&P, 11500 Highway 150, Mosca, CO 81146, (719) 378-6361; [fred\\_bunch@nps.gov](mailto:fred_bunch@nps.gov)

Investigator: Gary Wockner, Colorado State University, NREL, Fort Collins, CO 80523; 970-491-5724, [gwockner@nrel.colostate.edu](mailto:gwockner@nrel.colostate.edu)

**Project Abstract:** In 2000 the U.S. Congress authorized the expansion of the former Great Sand Dunes National Monument by establishing a new Great Sand Dunes National Park and Preserve in its place, and establishing the Baca National Wildlife Refuge. A new ungulate management plan to address the challenges brought about by the new land designations needs to be developed. The new land areas have different management requirements, and the situation is predicted to result in elk seeking out the park and other protected areas as refugia. In addition, about 1,500 bison graze the Medano-Zapata Ranch, owned by The Nature Conservancy (TNC). TNC seeks to increase bison numbers to represent a genetically viable unit and a representative, semi-wild and migratory population. Opinions vary as to the numbers of bison needed to accomplish that goal. Elk move freely across all elements of the new land designations (park, preserve, refuge, TNC ranches) and elk and bison share the Medano-Zapata Ranch. Managers seek to gather information in order to manage the entire land complex as one ecosystem. For this cooperative agreement, the CSU cooperator will develop an ecological model using empirical data collected by NPS and USGS to predict ungulate carrying capacity under various management scenarios determined by local resources managers from various agencies in the San Luis Valley, Colorado. The model will require cooperator to use local vegetation maps that have been developed by the Natural Resources Conservation Service (NRCS) and also vegetation maps from surrounding areas that are not as well developed. Using the GIS-based Carrying Capacity Model developed by the cooperator, we will predict effects of management scenarios that may include such actions as reducing bison numbers, reducing elk numbers, moving bison around by driving them, encouraging annual migrations of bison, moving elk around with hunts or drives, and others suggested by local land managers. We will evaluate fencing elk and bison from key vegetation stands.

**Outcomes with Completion Dates:** Final modeling report, which includes estimates of carrying capacity for various management scenarios (with revisions from 2 collegial reviewers incorporated into the final report). Model development will take place in FY08; report will be completed in FY09.

**Keywords:** elk, bison, grazing plan, carrying capacity, Great Sand Dunes NP&Preserve, Colorado State University

**For Administrative Use Only:**

Date Annual Report Received:

Date Final Report Received:

Publications, etc. on file: