Project Summary
Rocky Mountains Cooperative Ecosystem Studies Unit

Project Title: Incorporating Ecological Modeling into Wildlife Health Management Planning
Discipline: Natural
Type of Project: Research
Funding Agency: National Park Service
Other Partners/Cooperators: Colorado State University
Effective Dates: 6/15/2005 – 12/31/2007
Funding Amount: $34,000

Investigators and Agency Representative:
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Project Abstract:

In making wildlife management decisions involving complex ecological systems, comparisons of possible actions can seem confusing and indeterminate. Mathematical modeling can make predictions regarding the outcomes of certain perturbations and the efficacy of various management actions. Two areas that the National Park Service, Biological Resource Management Division (NPS BRMD) is particularly interested in modeling are infectious diseases and population control measures. The impacts of infectious diseases on wildlife populations and the results of management interventions on prevalence of these diseases are important questions that can be investigated using modeling. Modeling can also be used to make temporal predictions about population level effects of various levels of fertility control and culling actions.

Modeling chronic wasting disease (CWD) of deer and elk will be used as an initial step in exploring modeling collaboration between the NPS and Colorado State University. CWD is a topic of immediate concern to the NPS. Specifically, findings from modeling the effects of selective predation on the dynamics of CWD in free-ranging populations of deer and elk would be useful in management planning. Based on the outcome of this initial modeling collaboration, additional efforts will be pursued.
Colorado State University (CSU) College of Natural Resources has considerable expertise in modeling infectious diseases and effects of fertility control on wildlife populations. Dr. N. Thompson Hobbs has published papers in scientific journals on both these topics and is a recognized expert in ecological modeling. Collaboration with Dr. Hobbs provides a unique opportunity for accessing specialized expertise, providing mentoring on ecological modeling to NPS staff, and providing CSU students with “real life” management issues from the NPS.

Outcomes with Completion Dates:
1. A modified CWD-predation model for a deer population, as adapted from the initial task order work in which an elk population was modeled.
2. Continued support to co-author a manuscript with NPS Biological Resource Management Division (BRMD) staff suitable for publication in a peer reviewed journal.
3. Up to four oral presentations to meetings of park staff and the public.
4. Continued consultation on additional modeling efforts related to wildlife health issues.

Keywords: ecological modeling, wildlife, health, NPS-Biological Resource Management Division, Colorado State University, Chronic Wasting Disease, deer, elk

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Date Annual Report Received:

Date Final Report Received:
Publications, etc. on file: