

Project Summary

Rocky Mountains Cooperative Ecosystem Studies Unit

Project Title: Development of a Novel, Statistically Valid Methodology for Corridor Identification for National Park Service Biological Resources Projects

Discipline: Natural
Type of Project: Research
Funding Agency: National Park Service
Other Partners/Cooperators: Colorado State University
Effective Dates: 8/16/2012 - 1/1/2016
Funding Amount: \$ 48,000

Investigators and Agency Representative:

NPS Contact: Linda Drees, National Park Service, Biological Resources Management Division, 1201 Oakridge Dr., Suite 200, Fort Collins, CO 80525, 970 225-3595 voice, linda_drees@nps.gov

Investigator: Mevin Hooten, Colorado Cooperative Fish and Wildlife Research Unit, Wagar Bldg., Colorado State University, Fort Collins, CO 80523-1484, 970 491-1415, hooten@rams.colostate.edu

Project Abstract: Conserving wildlife corridors, both for migratory and wide-ranging species for which large movements are an integral part of their natural history, is a critical stewardship act for sustaining viable populations of these species. Such corridors will also provide landscape linkages for many wildlife species as climate change affects habitat. However, identifying these corridors has proven to be a complex and difficult task. The National Park Service (NPS) Biological Resource Management Division, Wildlife Conservation Program proposes to partially fund a doctoral student to help develop a novel and statistically valid methodology for identifying wildlife movement corridors. The methodology will be developed such that it will be applicable to species of multiple taxa occurring in any ecosystem. Our approach would be to use two existing, extensive data sets including (1) an 11-year location data set (> 45,000 locations obtained from 1999-2010) for the 218 Canada lynx (*Lynx canadensis*) reintroduced by the Colorado Parks and Wildlife (CPW) to Colorado in an effort to establish a viable population of lynx in the state and (2) a 7-year data set of mountain lion (*Puma concolor*) movements and habitat use. Both species proved to disperse and move widely throughout Colorado with some individual lynx moving as far as Canada, Nevada, New Mexico and Iowa. Using existing data collected from free-ranging individuals will allow the development of the methodology to be based on real-life situations and vagaries that exist in most wildlife data sets. Once the methodology is developed from data on these two species, it could then be used to identify corridors for other migratory and wide-ranging species occurring in different ecosystems. In addition, the analysis will provide species-specific information to all parks with populations of Canada lynx and/or mountain lions on movement and corridor needs as well as other agencies working on the conservation and stewardship of these species. In particular, this lynx data analysis will also provide site specific information to National Parks in Colorado, including Rocky Mountain and Great Sand Dunes on lynx habitat use and movement corridors within or near their boundaries that will help manage for sustaining this federally threatened species in its southernmost distribution. Several ongoing monitoring efforts have produced a suite of telemetry and landscape data that will be used in the modeling for this project. Previous studies have indicated that roads, land use, and climate change impact these large carnivores, and the need for sophisticated tools and analyses concerning large-scale spatial corridor characterization is imperative.

This project will provide a novel and statistically valid methodology to better understand movement and spatial corridors, specifically for Canada lynx and mountain lions, but also with a broader application to other species and framework for understanding similar movements for other wide-ranging wildlife species for the National Park Service (NPS) Biological Resources Management Division. The Colorado Cooperative Fish and Wildlife Research Unit (CCFWRU) and Colorado State University Department of Fishery, Wildlife and Conservation Biology (CSU FWCB) will provide specialized statistical assistance through substantial interaction among CSU FWCB, CCFWRU, Colorado Parks and Wildlife (CPW), BRMD and NPS Park Biologists which will be necessary for CSU FWCB and CCFWRU to conduct its work. NPS will provide context, goals and objectives for that will allow the CCFWRU, CPW and CSU FWCB to develop the most statistically valid and effective methodology for identifying wildlife corridors.

Outcomes with Completion Dates: Due Date for Final Report and/or Other Products: January 1, 2016

Keywords: wildlife corridors, Canada lynx and mountain lions, National Park Service, Biological Resources Management Division, Colorado State University, Colorado Cooperative Fish and Wildlife Research Unit