Project Summary
Rocky Mountains Cooperative Ecosystem Studies Unit

Project Title: Mountain Lion Predation Ecology at Bighorn Canyon NRA, Phase 1 & 2

Discipline: Natural Resources
Type of Project: Research
Funding Agency: National Park Service
Other Partners/Cooperators: Utah State University
Effective Dates: September 30, 2009 – December 31, 2015)
Funding Amount: $100,000 (FY11: $10,000; FY09: $90,000)

Investigators and Agency Representative:

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Abstract: Small isolated populations such as bighorn sheep and wild horses at BICA are particularly vulnerable to predation pressures. In 2004 mountain lions killed almost 100% of the wild horse foal crop in the Pryor Mountains and studies of bighorn sheep in the park have documented lion predation as a major cause of mortality. Studies in the California mountains have implicated lion predation as a cause of population extinctions of bighorn sheep. Deer populations in the park may allow lion populations to remain high, even when sheep and horse number are low. This study will better allow BICA management to interpret population trends and interactions between the three ungulates and their predator, give us important baseline information, and inform habitat improvement decisions.

In this pilot project two or three mountain lions will be captured with hounds or foot snares and fitted with GPS collars. GPS collars will be programmed to collect 6 locations a day. This will allow us to locate kills of wild horses, bighorn sheep and deer. Kills will be mapped, horizontal visibility at kill site measured, and species, sex and age of kill recorded. GPS locations will also be used to delineate mountain lion home ranges and movement patterns. These data will be used in habitat improvement planning, and assessing horizontal visibility as an indicator of habitat quality. If this pilot study gives good results, additional funding will be sought to recapture and re-collar existing study animals and to increase the sample size by 2-4 additional lions, increasing the usefulness of the data.

Researching mountain lion ecology and behavior at Bighorn Canyon NRA will give us information on four species of great interest to the park and to the public. The park's wild horse herd draws visitors from all around the world, and a strong local advocacy group exists. Lion predation was implicated in the loss of almost the entire 2004 foal crop. Hunters took three lions in the Pryor Mountains during the 2004-2005 winter and predation on foals greatly declined. It may be that individual lions are learning to take foals, and are capable of having effects on the population growth rate of the herd.

The bighorn sheep is the park's namesake species. The park's herd is descended from animals transplanted into the area in the 1970s. A USGS study of radio collared sheep in the park (Schoenecker 2004) has indicated that lion predation is a major cause of death for bighorn sheep. Of 19 known mortalities of sheep, at least 5 were attributed to mountain lions. Sheep numbers currently seem to be stable to increasing, but predation could have been a factor in the decline in sheep numbers recorded in the mid 1990's. Work in California suggests that lions may have direct or indirect roles in driving small isolated populations to extinction (Wehausen 1996).

Deer are abundant, at least in winter, but not much studied in the park. Their numbers may be supporting a higher number of mountain lions in the park then would otherwise be supported by the sheep and horses (Berger and Wehausen 1991). Knowing predation levels on deer will help in the management of all four species.

Outcomes with Completion Dates: August 1, 2014

 Keywords: Utah State University, Bighorn Canyon NRA, mountain lion, predation, bighorn sheep, wild horses, deer