

STATUS REPORT OF MOUNTAIN LIONS IN SOUTH DAKOTA

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Abstract: Mountain lions historically occurred in South Dakota but were nearly extirpated in the 1900s due to bounties placed on this animal from 1899 to 1966. Since receiving legal protection in 1978, the population has reestablished in the Black Hills, SD, to the point that South Dakota Department of Game, Fish, and Parks (SDGF&P) is seeking to determine research and monitoring needs and establish a mountain lion population goal. In 1998, a 5-year research project was begun by the Department of Wildlife and Fisheries Sciences at South Dakota State University in cooperation with SDGF&P, to determine distribution, estimate the current population size, and evaluate potential surveys for monitoring population trends of mountain lions in the Black Hills. A habitat-relation model was constructed to identify potential mountain lion habitat in the Black Hills. Eleven mountain lions (6 males, 5 females) were radio-collared between January 1999 and April 2000. Mean home range size for 3 male mountain lions was 798.6 km² and for 3 females, 158.9 km². A scent station survey was conducted during summer 2000 in habitat most likely to be used by mountain lions, but the survey was not effective at documenting lion presence.

INTRODUCTION

In the late 1800's, mountain lions (*Puma concolor*) occurred throughout South Dakota and were considered numerous in the Black Hills (Turner 1974, Packet and Hackman 1995). However, in the early 1900's the population declined from bounties placed on this animal from 1889 to 1966 (SDGF&P 1998a). For example, from 1906 through 1930 there were no lions taken, and in 1931, only one mountain lion was killed in the Black Hills (Young and Goldman 1946). After 1931, few unverified reports of mountain lions occurred in the Black Hills and in 1978, the species was classified as state threatened. It is believed that transient mountain lions originating from established populations in the Bighorn Mountains and throughout Wyoming recolonized the Black Hills (Berg et al. 1983). Not only are mountain lions reoccupying their former range in the Black Hills, but lions also are occasionally sighted in the Missouri River Breaks Region in the center of the state. In 1997, South Dakota Department of Game, Fish, and Parks (SDGF&P) estimated 15 to 25 mountain lions resided in the Black Hills with an additional 15-25 on the western South Dakota prairie (SDGF&P 1998b); estimates were based on antidotal information and most were unverified.

In 1985, SDGF&P began recording sightings of mountain lions in the Black Hills. They observed an overall increase in numbers of reported sightings from 1995 to 1999. Greater numbers of sightings in the last several years likely indicate continued population expansion in the Black Hills. In addition, numbers of sightings are not randomly distributed in the Black Hills. When numbers of reported sightings were adjusted for county population size, more reports were obtained from the southern counties (Custer and Fall River counties) than the northern counties (Lawrence and Pennington counties). In addition, although sample sizes are small (n=12), higher incidences of mountain lion deaths (since 1996) occurred in the southern two counties (58%), than in the counties of the northern Black Hills (42%). Results of these independent data sets indicate that the southern Black Hills may have better mountain lion habitat and higher lion densities than the northern Black Hills.

South Dakota is facing similar concerns of human safety and protection of property from individual 'problem' mountain lions to that of other western states. Although there have been no documented mountain lion attacks on pets or humans in the Black Hills, there have been 2 confirmed reports of deer killed by mountain lions in Rapid City; the first was an adult male mule deer (*Odocoileus hemionus*), and the second, a fawn mule deer (T. Benzon, SDGF&P, Rapid City, SD, pers. commun.). Due to their controversial nature, the SDGF&P drafted an action plan to manage for mountain lion/ human/ property interactions (SDGF&P 1998b). The mountain lion action plan describes current state law regarding management of this state-threatened predator, and lists both short and long-term management objectives for the species. The first long-term objective of the plan is to determine research and monitoring needs and establish a mountain lion population goal for various areas in South Dakota. In 1998, a 5-year research project was begun by the Department of Wildlife and Fisheries Sciences at South Dakota State University in cooperation with SDGF&P to determine distribution, estimate the current population size, and evaluate potential surveys for monitoring population trends of mountain lions in the Black Hills, South Dakota. In addition, in 1999 the SDGF&P Commission was given authority by the Governor of South Dakota to change the status of the mountain lion from threatened to a game species to control numbers if necessary.

PROGRESS

To date, the University has developed a draft habitat-relation model for mountain lions to determine potential distribution in the Black Hills. The model incorporated habitat requirements [e.g., steep slopes (associated with rocky and rugged topography), proximity to drainages, and proximity to primary prey (winter and summer range of deer, *Odocoileus virginianus*) of the species based on peer-reviewed literature into a geographical information system, to ultimately rank habitat in the Black Hills according to its suitability to mountain lions. The model will be tested for its ability to predict lion presence using locations of radio-collared study animals and other mountain lion sign. A total of 11 mountain lions (6 males, 5 females) have been captured and radio-collared. Weekly locations, using aerial-telemetry techniques, are being obtained to gather information on home-range size and how individuals space themselves relative to each other. Preliminary cumulative average home-range size [Minimum Convex Polygon (100%)] of 3 adult male mountain lions is 796.8 km² and for that of 3 adult females, 158.9 km². In addition, we are recording locations of mountain lions (from snow tracks) that have not been radio-collared to include in estimating lion density and distribution for the region.

We conducted a scent-station survey during summer 2000 in cooperation with the Wildlife and Fisheries Department at University of North Dakota. First, we tested various scent lures for their effectiveness at attracting mountain lions on 4 captive cougars (1 adult male, 1 adult female lion, and 2 juvenile males; Bramble Park Zoo, Watertown, SD; South Dakota State University, Brookings, SD). Then, we used the habitat relation model to aid in determining high-quality mountain lion habitat to aid in placement of 12 scent-stations. We also placed scent stations in portions of annual home ranges of 4 radio-collared cats. Although 2 scent lures (skunk essence and Powder River cat call) seemed to elicit desired responses in captive cats (based on detection rates, and time spent and behaviors exhibited at the lures) scent stations were not effective at attracting wild mountain lions in the Black Hills.

The SDGF&P is continuing its efforts of recording sightings of mountain lions throughout the Black Hills to monitor population trends. In addition, we are examining other methods to determine population size and monitor trends [e.g., Transect-Intercept Probability Sampling, (VanSickle and Lindzey 1991), track surveys (Smallwood and Fitzhugh 1995), etc.].

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