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Re: Mountain Lion Management Plan

Greetings Wildlife Officials:

On behalf of Sinapu, Predator Conservation Alliance, and our collective 2,300 members we thank you for this opportunity to comment on the April 2005 South Dakota Mountain Lion Management Plan, Version 05-2 (hereinafter “plan”). The document reflects many hours of staff’s time, a commitment to excellent public process, and contains valuable information and ideas.

**Our Mission**

**Sinapu, named after the Ute word for wolves, is dedicated to the restoration and protection of native carnivores and their wild habitat in the Southern Rockies, and connected high plains and deserts.**

Some of the features we most appreciated include the fact that the management plan is informed by a five-year study, the commitment to working with a broad public with a diversity of ideas and opinions as the plan moves forward, the agency’s guiding principles (p. 12), a desire to work with and educate the public about mountain lion conservation, and having well-thought through protocols when human-lion or lion-livestock conflicts arise. Finally, having hunters check in within 24 hours after killing a puma and submitting its body for purposes of study (DNA, sex, and age) is forward thinking. Again, South Dakota should be commended for these excellent features in its draft lion plan.

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Our understanding about mountain lion behavior and ecology is a relatively new area of study—perhaps beginning in earnest with Maurice Hornocker’s study in Idaho in the mid-1960s. That said, a growing body of literature has contributed to our knowledge of mountain lions (*Puma concolor*). We hope our comments, which we have grounded in the scientific literature, will help stimulate the best possible decision on mountain lion management in South Dakota.

Our biggest criticism involves the hunting quota. We believe that the figure of 20 mountain lions per year is too high and will suppress the population. We urge the State to educate hunters to protect females and their dependent kittens, and we request that tag fees be set at a much higher level. We have other concerns as well, and our comments follow in detail.



## **Habitat and Refugia:**

Perhaps the greatest threat to species in the United States and around the globe is the failure to protect adequate habitat. As a result, land for wildlife has disappeared or become fragmented. Roads to new houses, oil and gas developments, or into forests destined for logging operations spider web through once untrammelled areas. Roads contribute to direct mortalities when animals and vehicles collide, to indirect mortalities—because roads facilitate access to sport hunters as well as poachers—and finally, roads bifurcate populations (Alexander and Waters 2000, Gloyne and Clevenger 2001, Clevenger et al. 2002, Kerley et al. 2002). Even secondary roads and non-motorized trails can alter animal behavior and connectivity in habitats—which in turn influences wildlife populations and ecosystem functions (Crooks and Soule 1999, Craighead 2002, Dickson and Beier 2002). For large carnivores, such as pumas, roads not only alter survivability, but disrupt gene flow (Craighead 2002). Promoting land conservation requires a collective effort among policy makers, wildlife managers, citizens, land managers, and even corporations.

Biologists have recommended several approaches to conserving mountain lions for the long term, including creating hunt-free refugia in large connected and preserved landscapes, managing them across political boundaries, and providing all large mammals with safe road crossing zones (Noss et al. 1996, Logan and Sweanor 2001, Laundre and Clark 2003, Logan et al. 2003).

## **Assess Amount of Habitat and Prey Base:**

The plan provides that the “current mountain lion population in the Black Hills is around its carrying capacity” based upon anecdotal sightings—including dispersing animals and lion mortalities (p. 41). Logan and Sweanor’s (2001) research in New Mexico indicates that young male lions have an obligation to disperse from the natal area to ensure that inbreeding is avoided—since most of the females in the natal area are related to each other. Therefore, it does not follow, as the plan infers, that because males are dispersing, the Black Hills has reached its carrying capacity.

How did South Dakota estimate its carrying capacity and how does it know it has reached that threshold? It appears that this statement is unfounded based on the evidence provided in the plan. How did the researchers estimate or count the number of lions in the Black Hills? How did the researchers estimate or count the number of prey in the Black Hills? Did the researchers use DNA evidence, capture-mark-and recapture, or find some other means to count species? This part of the document, is one of the weakest, although it is the basis for setting the lion-hunting quotas.

Based upon the precautionary principle, before the lion-hunting quota can be set, we need to know the above information so that a decision does not hurt the puma population in the long-term.

## **Setting the Hunting Quota:**

In a set-out box, the plan states, “Guiding Principle = Conservative Harvest,” and “population maintenance goal -> 80-85% of carrying capacity (still allows population growth)” (p. 45). We feel strongly that the proposed harvest is neither conservative and the ideal of keeping the population to 80 to 85 percent of the



carrying capacity does not allow for “population growth.” On the contrary, this level of harvest suppresses the population—in opposition to the stated intent of the plan.

In Logan and Sweanor’s (2001) study, the age structure of their population was 61 percent adults, 6 percent subadults, and 33 percent kittens. For purposes of simplifying the math, we will round the numbers (60 percent adults, 10 percent subadults, and 30 percent kittens) in our recommended harvest quota.

If we suppose that the Black Hills holds 140 mountain lions (plan at p. 45), we multiply 140 by .6 to get the total number of adults: 80. If we subtract 20 (the quota), we get 60, or 24 percent of the adult population. Twenty-four percent is far from a conservative harvest.

If we add subadults (10 percent) into the equation—60 percent adults plus 10 percent subadults, we now have 98 animals. If we subtract 20 from 98, that leaves 79, or 20 percent of the population. Again, this is not a conservative number. Twenty to twenty-four percent is at the high end of a harvest rate, and far from conservative.

Moreover, South Dakota has not explained how they will measure changes in the population from hunting pressures. How will the State know when it has reached its objectives? What efforts for monitoring are there? As the plan indicates, biological questions include: how will the harvest effect age and sex structure of the population, and how will these changes effect the population itself and behavior? How does the State plan to monitor these things? When legal hunting is instituted, will poaching levels be elevated? These issues have not been addressed in the plan.

If the State must institute a hunting quota, we recommend that the State harvest between 10 and 15 percent of the adult plus subadult population, especially since there are no good population data on the Black Hills and because there is no way to monitor the effect on the population. It is far more important to have a biologically, rather than socially sustainable hunting amount (plan at 13).

### **Protecting Females and Their Kittens:**

Protecting female pumas is a paramount concern for the species’ long-term conservation; high human-caused mortality of female pumas has the potential to harm puma populations (Logan and Sweanor 2001, Laundre and Clark 2003, Ruth et al. 2003). Females’ reproductive and nurturing roles are vital to this species’ persistence. Where females are hunted, it is more likely that dependent kittens will be orphaned and die from starvation or predation (Logan and Sweanor 2001, Ruth et al. 2003, DeSimone et al. 2005).

Pumas experience low fecundity and recruitment rates. Females, sexually immature until approximately two years old, give birth to an average of three kittens only every two years. Only a few kittens survive to the subadult state, fewer secure their own home range, and even less have the opportunity to breed. Even in un hunted populations, the mortality rate is high. Many kittens die within a few months of birth from predation, cannibalism, disease, or starvation (Logan and Sweanor 2001).

Although females may produce kittens at any time of year, most females give birth in the summer and fall months (Robinette et al. 1961, Anderson et al. 1992, Logan and Sweanor 2001, Ruth et al. 2003). Across the



West, puma-hunting seasons generally occur in the weeks after the peak birthing period to accommodate hunters' need to track in snow (Keefover-Ring 2004). As a result, during most western states' hunting seasons, approximately half of all adult females will have the young-of-the-year when those kittens are only a few weeks or months old.

Of the total number of females killed by hunters each year, somewhere between 38 to 56% of those females have dependent kittens (Logan and Sweanor 2001). In Colorado for example, Division of Wildlife records show that the 10-year average for females in the total hunter harvest is approximately 44% for the past 10 years, but in some units, females accounted for 50 to 55% of the total kill (J. Apker, Colo. Division of Wildlife, unpublished report). In a Montana study (DeSimone et al. 2005), 84% of the radio-collared lions on the study site died from hunters or poachers, and the highest cause of kitten mortality (43%), resulted from starvation after hunters had killed the mothers. In comparison, only 29% of the kittens died from natural causes (such as starvation and cannibalism).

While all western states (except Texas) prohibit the shooting of females accompanied by kittens, or the hunting of spotted kittens, this policy is, for all intents and purposes, futile. It is not easy to determine if a female has dependent young because kittens rarely travel with their mother in their first year of life (Hemker et al. 1984, Barnhurst and Lindzey 1989, Ruth et al. 2003). Females stash their young away while hunting (to protect them from toms, other predators, or inclement weather), then return later to lead the kittens to her kill (K. Logan, Colo. Division of Wildlife, personal communication). Because hunters cannot detect if a female has dependent kittens, it makes sense to protect most females by setting subquotas—the maximum number of females that can be hunted in each lion unit. Idaho, Montana, Wyoming, and the Southern Ute Tribe in southern Colorado set female subquotas (Keefover-Ring 2004 and S. Whiteman, Southern Ute Tribe, personal communication).

While buying a cat before shooting it can help hunters to distinguish between males and females (there is a distinguishing black spot located below the anus on male animals), hunters in South Dakota may not have that opportunity since they will not be relying on hounds. Instead, hunters may be able to distinguish between males and females using paw-size and stride-length measurements. We hope that South Dakota can develop those protocols to help hunters to avoid taking females, which may have dependent kittens.

### **Tag Prices:**

South Dakota's proposed tag prices for mountain lions are far too low for such a species with low fecundity and recruitment rates. The \$5 resident tag and \$45 non-resident tag are on the low end compared with other states where lion hunting is allowed (table below). We encourage the State to set a tag fee that is commensurate with such a rare animal.



State	Resident	Non-Resident
AZ	10	200
CO	45	450
ID	12	129
MT	15	320
NM	33	210
NV	26	101
OR	12	150
TX	23	45
UT	58	258
WY	24	300
Average:	\$26	\$216

**Livestock Protection:**

Puma-livestock conflicts can be reduced by good husbandry practices:

1) protect the native prey base by preventing poaching; 2) concentrate calving seasons because a shorter season helps the rancher facilitate control; 3) “locate maternity pastures at distance from [the kind of] cover that cats prefer;” 4) use electric fencing around maternity pastures; 5) remove calves from pastures where depredation has occurred and replace with older animals; 6) keep records of livestock losses so that the rancher can better plan in the future; 7) conserve forests (Polisar et al. 2003).

Non-lethal predator control methods effectively and humanely ward off predators. According to the U.S. Department of Agriculture’s National Agricultural Statistics, few mountain lions prey on cattle or sheep. Less than four percent of all cattle die from predation. Sheep, on the other hand, are highly susceptible to predation—but few predation events stem from lion attacks—lions only account for about 6% of all predator kills of sheep mortality (S. Anderson, NASS, personal communication, NASS 1997, 2000, 2001).

**Conclusion:**

Thank you again for providing the public with the opportunity to comment on the proposed plan for managing mountain lions on the Black Hills. While the plan has many features that are promising and show a commitment to excellent public process, we hope the plan can be improved:

- 1) We would like to see the South Dakota Game, Fish, and Parks make a commitment to ensuring that lands are managed for wildlife and not just for development or recreation in a way that impacts ecosystem communities.
- 2) We hope that the agency not rely on anecdotal data to estimate the carrying capacity for lions and their prey on the Black Hills.





- 3) We hope that the agency will commit to ensuring that if a hunting quota must be established that it is done using the best available science and that the population is managed sustainably, and not suppressed by overkill. At the most, we hope that the quota be set at around ten to fifteen percent of the adult (and or subadult) population, not fourteen percent of the entire population.
- 4) Once a hunting season is established, we hope the agency will carefully monitor the population using DNA analysis, mark and recapture, and sex and age analyses to establish what effect hunting has on the population.
- 5) We request that hunters be given natural history information about mountain lions and particularly about females including the large amount of time they spend with kittens, and the low recruitment rate of pumas. Females and their kittens need to be protected, not only to prevent kitten orphaning, but to save the most important demographic of a population: breeding females.
- 6) We ask that hunters be trained to avoid taking females, using measurements of paw size or stride length. We request that tag prices be commensurate with the rareness and low density of this species.
- 7) Finally, we ask that livestock producers be educated on how to avoid attracting predators to their animals using a variety of techniques outlined above.

If you have comments, questions, or concerns, please do not hesitate to contact us.

Sincerely,

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## Bibliography

- Alexander, S. M., and N. M. Waters. 2000. The effects of highway transportation corridors on wildlife: a case study of Banff National Park. *Transportation Research Part C-Emerging Technologies* 8:307-320.
- Barnhurst, D., and F. G. Lindzey. 1989. Detecting Female Mountain Lions with Kittens. *Northwest Science* 63:35-37.
- Clevenger, A. P., J. Wierzchowski, B. Chruszcz, and K. Gunson. 2002. GIS-generated, expert-based models for identifying wildlife habitat linkages and planning mitigation passages. *Conservation Biology* 16:503-514.
- Craighead, L. 2002. Wildlife-related Road Impacts in the Yellowstone to Yukon Region. In *Proceedings of the Transportation Networks and Wildlife*, 16-19, April 2002, Spokane, Washington, USA.
- Crooks, K. R., and M. E. Soule. 1999. Mesopredator release and avifaunal extinctions in a fragmented system. *Nature* 400:563-566.
- DeSimone, R., B. Semmens, T. Chilton, V. Edwards, G. Hedrick, R. Jaffe, A. Jakes, D. Powell, J. Powers, S. Poweres, and M. Trapkus. 2005. *Garnet Mountains: Mountain Lion Research*. Montana Fish, Wildlife, & Parks, Montana, USA.
- Dickson, B. G., and P. Beier. 2002. Home-range and habitat selection by adult cougars in southern California. *Journal of Wildlife Management* 66:1235-1245.
- Gloyne, C. C., and A. P. Clevenger. 2001. Cougar (*Puma concolor*) use of wildlife crossing structures on the Trans-Canada highway in Banff National Park, Alberta. *Wildlife Biology* 7:117-124.
- Hemker, T. P., F. G. Lindzey, and B. B. Ackerman. 1984. Population Characteristics and Movement Patterns of Cougars in Southern Utah. *Journal of Wildlife Management* 48:1275-1284.
- Keefover-Ring, W. 2004. *The state of pumas in the west*. Sinapu, Boulder, Colorado, USA.
- Kerley, L. L., J. M. Goodrich, D. G. Miquelle, E. N. Smirnov, H. B. Quigley, and N. G. Hornocker. 2002. Effects of roads and human disturbance on Amur tigers. *Conservation Biology* 16:97-108.
- Laundre, J., and T. W. Clark. 2003. Managing puma hunting in the western United States: through a metapopulation approach. *Animal Conservation* 6:159-170.
- Logan, K. A., and L. L. Sweanor. 2001. *Desert puma : evolutionary ecology and conservation of an enduring carnivore*. Island Press, Washington, DC.



- Logan, K. A., L. L. Sweanor, and M. G. Hornocker. 2003. Reconciling Science and Politics in Puma Management in the West: New Mexico as a Template. Page 146 in Proceedings of the Seventh Mountain Lion Workshop. Wyoming Game and Fish Department, 15-17 May, 2003, Jackson, Wyoming, USA.
- Noss, R. F., H. B. Quigley, M. G. Hornocker, T. Merrill, and P. C. Paquet. 1996. Conservation biology and carnivore conservation in the Rocky Mountains. *Conservation Biology* 10:949-963.
- Polisar, J., I. Maxit, et al. (2003). Jaguars, pumas, their prey base, and cattle ranching: ecological interpretations of a management problem. *Biological Conservation* 109(2): 297-310.
- Robinette, W. L., J. S. Gashwiler, and O. W. Morris. 1961. Notes on Cougar Productivity and Life History. *Journal of Mammalogy* 42:204-217.
- Ruth, T., K. Murphy, and P. Buiotte. 2003. Presence and Movements of Lactating and Maternal Female Cougars: Implications for State Hunting Regulations. Page 144 *in* Proceedings of the Seventh Mountain Lion Workshop. Wyoming Game and Fish Department, 15-17 May, 2003 Jackson, Wyoming, USA.
- U.S. Department of Agriculture-National Agriculture Statistics Service. 1997. Cattle and Calves Death Loss.
- U.S. Department of Agriculture-National Agriculture Statistics Service. 2000. Sheep and Goats Predator Loss.
- U.S. Department of Agriculture-National Agriculture Statistics Service. 2001. Cattle Predator Loss.