

# SOUTH DAKOTA MOUNTAIN LION ACTION PLAN *2024-2028*



**SOUTH DAKOTA DEPARTMENT OF GAME, FISH AND PARKS  
PIERRE, SOUTH DAKOTA**

**WILDLIFE DIVISION REPORT 2024-03**

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This document is for general, strategic guidance for the Division of Wildlife and serves to identify what we strive to accomplish related to mountain lion management. This action plan will be utilized by Department staff on an annual basis and will be formally evaluated at least every 5 years.

## **ACKNOWLEDGEMENTS**

This plan is a product of substantial discussion and input from many wildlife professionals. Comments and suggestions received from members of the South Dakota Mountain Lion Stakeholder Group, private landowners, hunters, and those who recognize the value of mountain lions and their associated habitats were also considered.

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GFP Mountain Lion Action Plan Team that assisted with plan writing, data review and analyses, critical reviews and/or edits to the South Dakota Mountain Lion Management Plan, 2019-2029 – Nathan Baker, Byron Buckley, Stephanie Buckley, Steve Griffin, Trenton Haffley, John Kanta, Mike Klosowski, Julie Lindstrom, Chad Lehman, Jim McCormick, Andrew Norton, Dan Sternhagen, and Lauren Wiechmann.

Those who served on the South Dakota Mountain Lion Stakeholder Group during this planning process included: Brian Dail (Greater Dacotah SCI); Sean Fulton (Black Hills Sportsmen Club); Nancy Hilding (Prairie Hills Audubon Society); Chad Kiel (Predator Hunter Association); Chase Larson (Black Hills Mountain Lion Hunters); Suzanne Martley (SD Chapter of the Sierra Club); Dana Rodgers (SD Wildlife Federation); Todd Russell (US Forest Service); Matt Tucker (Rosebud Sioux Tribe); Jeremy Wells (SD Houndsmen Association). In addition to those citizens that volunteered for the stakeholder group, Commissioners Travis Bies and Travis Theel of the GFP Commission also attended and participated in the meetings.

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## INTRODUCTION

Mountain lions (*Puma concolor*) historically occurred throughout South Dakota and were considered numerous in the Black Hills. However, the population declined in the early 1900's due to unregulated hunting and bounties that were placed on mountain lions until 1966. In 1978, mountain lions were listed as a state threatened species. With a breeding population established in the Black Hills and a better understanding of population dynamics within the Black Hills, the mountain lion was removed from the state threatened species list and classified as a big game animal in 2003 with protection under a year-round closed season. The first regulated mountain lion hunting season in South Dakota was established in 2005 and continues today to provide hunting opportunities and manage populations towards desired social and biological objectives.

Overall, South Dakota residents have a positive attitude towards mountain lions. Public opinions on mountain lions vary, however, and there will always be a certain level of controversy surrounding the management of large carnivores. With the use of science-based knowledge to make management decisions, this plan will ensure a healthy, self-sustaining population of mountain lions in the Black Hills of South Dakota. The current Black Hills population objective is 200-300 total mountain lions, but actual population abundance may range depending on a multitude of factors. Population objectives for mountain lions on the prairie habitats of South Dakota have not been established as these areas are managed primarily to abate potential livestock losses on private property, minimize human conflicts, and maximize hunter opportunity.

The “*South Dakota Mountain Lion Action Plan, 2024-2028*” will serve as the guiding document for decision making and implementation of actions to ensure mountain lion populations are managed appropriately, addressing both biological and social tolerances, while considering the needs of all stakeholders. Additional information regarding mountain lion management, research, and history can be found in the *South Dakota Mountain Lion Management plan, 2019-2029* (South Dakota Game, Fish, and Parks 2019; [https://gfp.sd.gov/UserDocs/docs/LionPlan\\_FINAL\\_2019.pdf](https://gfp.sd.gov/UserDocs/docs/LionPlan_FINAL_2019.pdf)).

## POPULATION MONITORING

In general, mountain lions exhibit secretive behavior, occur in low densities, and occupy habitats with relatively dense vegetative cover and rough topography. These characteristics make estimates of population abundance and trend difficult. GFP uses numerous trend indicators to assess the mountain lion population in the Black Hills. The primary surveys and data used to assess trends include: 1) hunting season data, 2) documented mortalities, and 3) mark/recapture surveys. Analyses, results and detailed summaries of all mountain lion surveys and monitoring efforts are reported biennially (Lindbloom et al. 2023; [https://gfp.sd.gov/userdocs/docs/mountain\\_lion\\_status\\_report\\_2023.pdf](https://gfp.sd.gov/userdocs/docs/mountain_lion_status_report_2023.pdf)).

### **Hunting Season Data**

Hunting season dates and harvest limits are currently used to manage mountain lions in the Black Hills Fire Protection District (BHFPD), and a year-round season with no limit exists in the remainder of South Dakota. Harvest limits are established to ensure harvest does not exceed management objectives.

All harvested mountain lions in South Dakota must be presented to a GFP representative within 24 hours of harvest for inspection. Information is recorded about the harvest and tissue samples are collected from harvested mountain lions for genetic analyses used in mark/recapture population estimates. Trends in harvest age and sex proportions are evaluated annually in the Black Hills. Furthermore, harvest surveys are also sent to all licensed hunters to collect hunter effort (# days hunted) which is used to estimate harvest per unit effort.

### **Documented Mortalities**

All known mountain lion mortalities in South Dakota are recorded and the BHFPD mortalities are evaluated for population trend assessments. For trend assessments of mountain lions in the BHFPD of South Dakota, GFP primarily evaluates total, harvest, non-harvest, and removal mortalities. Variation in recovery or detection probability among cause-specific mortalities prevents comparison among categories.

Harvest mortalities can be influenced by hunting season regulations, weather, and other factors. Non-harvest mortality trend may reflect increases or decreases in the mountain lion population. However, factors influencing non-harvest mortality can be variable and may influence trend assessments.

### **Population Estimation**

Abundance of mountain lions in the Black Hills is estimated using the Lincoln-Petersen mark-recapture Chapman model. GFP uses biopsy-darting as the primary method to mark mountain lions immediately prior to the season, while the hunting season is considered the recapture event. DNA analyses are conducted by the USFS National Genomics Center for Wildlife and Fish Conservation, Missoula, MT.

Vital rates from radio-collared individuals and recruitment data from previous research studies in the Black Hills (e.g., Thompson 2009, Jansen 2011) are used as input variables to calculate the total mountain lion population. Age and sex composition of starting populations is based on the 3-year average composition of harvested mountain lions.

Population trajectories are an important management tool that enables a better understanding of harvest strategies dependent upon management objectives. Growth rates of mountain lion populations are primarily dependent on female survival and kitten recruitment. Understanding population rates of change allows managers to implement proactive management recommendations while practicing adaptive management techniques.

## DEPREDAATION AND PUBLIC SAFETY

Mountain lion management in South Dakota is a complex and adaptive process that must include careful consideration of the biological, social, economic, and political impacts. Overall, the demand for mountain lion depredation services from GFP is low. The most significant factor that likely affects social tolerance and the demand for mountain lion depredation services in South Dakota are population levels and landowners' financial dependency on livestock or other personal property. Fortunately, few landowners have interactions with mountain lions because of the animal's secretive nature and relatively low densities.

Conflicts with mountain lions may occur any time of the year but more frequently in areas with more people, more mountain lions, more livestock production, and less available habitat. Outside of the Black Hills, mountain lion habitat is limited and the potential for an incident increases. All reported mountain lion observations from the public in areas outside of the Black Hills are recorded into a centralized database. Observations of mountain lions within the Black Hills that occur in a municipality, urban, or other area/situation of current or future potential conflict are also recorded.

In South Dakota, mountain lions may be removed by GFP due to livestock depredation, attacks on pets, or in situations where a mountain lion poses a substantial threat to public safety. GFP will remove a mountain lion for attacking domestic animals. However, GFP may not remove a mountain lion in conflict situations where a pet provoked a mountain lion or where domestic animals could be protected using exclusionary fencing. GFP will not relocate a mountain lion that previously attacked livestock to another area, because it may impact another livestock producer. In these situations, it is GFP's current position to utilize lethal removal as the most appropriate management technique. However, GFP does provide technical advice to livestock producers and homeowners regarding non-lethal techniques (e.g., protective fencing and additional livestock husbandry practices) to be proactive and hopefully minimize mountain lion conflicts with livestock and pets. Feeding of prey species, such as deer and turkey, in urban areas or near rural homes is discouraged as it can lead to an increased presence of mountain lions.

Lethal control is conducted exclusively by GFP staff when deemed appropriate. However, in certain circumstances citizens may kill a mountain lion if necessary. Under SDCL § 41-6-29.2, killing of a mountain lion is permitted if reasonably necessary to protect the life of a person or if a mountain lion is posing an imminent threat to a person's livestock or pets. If a person kills a mountain lion pursuant to state law, they must contact GFP within twenty-four hours of killing the mountain lion.

While GFP management techniques and strategies have proven successful over the past 20 years, mountain lion depredation and the associated conflicts will continue to be a challenge. To help minimize these conflicts when possible, GFP must ensure that mountain lion populations are managed proactively and that management goals are being met. Defined

wildlife population objectives, management goals, and stakeholder opinions are critical to effectively manage wildlife populations (Leopold 1933, Riley and Decker 2000).

## **PUBLIC INVOLVEMENT AND OUTREACH**

Effective decision-making by wildlife agencies necessitates the need to consider public perceptions and opinions, as well as potential responses to management policies. Along with hunter harvest and biological data collected, public involvement is an important component in developing and implementing wildlife management plans. Public participation helps ensure decisions are made in consideration of public needs and preferences. It can help resolve conflicts, build trust, and inform the public about wildlife management in South Dakota. Successful public participation is a continuous process, consisting of a series of activities and actions to inform the public and stakeholders, as well as obtain input regarding decisions which affect them. No single citizen or group of citizens can represent the views of all citizens. Multiple avenues for public involvement and outreach, therefore, are used in the development of the Mountain Lion Management Plan. These approaches are designed to involve the public at various stages of plan development and to ensure opportunities for participation are accessible to all citizens.

South Dakota Game, Fish and Parks first began collecting public opinion information related to mountain lion management in 2002, at which time mountain lions were listed as a state threatened species (Gigliotti et al. 2002). Since that time GFP has administered multiple surveys regarding mountain lions in South Dakota: five state resident surveys (Longmire 2019, Gigliotti 2012, Gigliotti et al. 2009, Gigliotti 2002, and Gigliotti et al. 2002); three Black Hills deer hunter surveys (Gigliotti 2007a, 2006a, and 2005a); one elk hunter survey (Gigliotti 2006b); and 13 mountain lion hunter surveys (Huxoll 2018, Longmire 2017, 2016, 2015, 2014, 2013, 2012a, Gigliotti 2011, 2010a, 2009, 2008, 2007b, and 2006c). In addition to surveys, GFP has held multiple public meetings/open houses in 2005, 2010, and 2012 designed to provide information to the public and gather public input about mountain lion management in South Dakota. Additional public comment has been collected over the years in conjunction with management plan revisions; GFP Commission public hearings, open forums, and petitions processes; and via informal avenues such as emails and phone calls to the Department. A stakeholder group was established in conjunction with the 2024 management plan revision process as an additional means for gathering input related to mountain lion management. Additionally, a public opinion survey was administered to both hunters (i.e., the most recent season resident applicants for statewide and Black Hills mountain lion hunting and Black Hills big game hunting) and Black Hills residents (i.e., residents within municipalities in and around the Black Hills and residents outside of municipalities within 15 miles of the BHFPD) in the spring of 2024

### **Attitudes toward Mountain Lion Hunting Season**

Over the years South Dakota residents have been supportive of a mountain lion hunting season (Longmire 2019, Gigliotti 2012, Gigliotti et al. 2009, Gigliotti 2002 and Gigliotti et al. 2002). In the 2024 public opinion survey, hunters and residents were provided with a preamble detailing the Statewide (excluding the Black Hills Fire Protection District [BHFPD] and Custer State Park

[CSP]), BHFPD, and CSP mountain lion hunting season characteristics. Participants were asked how satisfied they were with the structure of the mountain lion season in 2022 – 2023. Approximately half of hunters (51%) and residents (59%) were neutral about the CSP season, half of hunters (46%) and residents (52%) were neutral about the BHFPD season, and half of hunters (49%) and residents (56%) reported some level of satisfaction with the statewide season outside BHFPD.

There is varied support for various mountain lion harvest strategies. Survey respondents were asked to report their level of support for different strategies that could be used if GFP needed to increase mountain lion harvest beyond current levels. Residents most favored expanding boot hunting opportunities (60%), allowing mountain lion harvest during deer season (45%), and allowing pursuit where multiple tracks are present (38%). Hunters most favored allowing mountain lion harvest during deer season (72%), expanding boot hunting opportunities (67%), and expanding hunting opportunities using dogs (62%). Residents were most opposed to allowing trapping/snaring (66%). Previous studies showed opposition to trapping/snaring. Currently, state law and administrative rule do not allow the taking of any big game animal (including mountain lions) with traps or snares. Previous survey results showed resident opposition to this method (59%). (Longmire 2019). Finally, hunters were most opposed to allowing non-resident harvest (68%).

### **Social Tolerance**

Research into the acceptance of wildlife indicates both objective and subjective factors shape beliefs about wildlife populations (Zinn et al. 2000; Decker and Purdy 1988). In addition to objectively measured population levels, risks, and benefits factors such as value orientations and perceptions of population levels, risks, and benefits have been found to be important in determining stakeholder acceptance capacity for wildlife (Zinn et al. 2000). Understanding attitudes is important since they can influence and predict behavior, and the more specific the attitude is toward a certain behavior the stronger the relationship between attitude and behavior (Vaske 2008, Fishbein and Manfredo 2003, Ajzen and Fishbein 1980).

The attitudes and beliefs about mountain lions held by SD residents are complex. Over the past 16 years surveys have consistently shown the full range of attitudes towards mountain lions is present among South Dakota residents, ranging from strong support to strong opposition toward mountain lions. Attitudinal statements have been used to measure SD residents' beliefs regarding mountain lions (Longmire 2019, Gigliotti 2012 and Gigliotti et al. 2002).

In the 2024 study, three items measured existence and environmental value of mountain lions. Over half of hunters (57%) and the majority of residents (74%) agreed that the presence of mountain lions was a sign of a healthy environment. The majority of residents in 2002 (72%) agreed that the presence of mountain lions was a sign of a healthy environment, while 12 percent disagreed and 16 percent neither agreed nor disagreed with it (Gigliotti et al. 2002). In 2018, a smaller majority (57%) agreed that the presence of mountain lions was sign of a healthy environment, 20 percent disagreed, and 23 percent neither agreed nor disagreed with it. Additionally, most hunters (61%) and residents (76%) agreed it is important to them that

mountain lions persist in South Dakota for future generations. Most hunters (66%) and residents (80%) also agreed it is important to them to know that mountain lions exist, whether they ever see one in the wild or not.

Attitudes towards mountain lion hunting were also assessed in the 2024 survey. Over half of hunters (63%) and a little less than half of residents (47%) agreed mountain lion hunting is an important tradition in South Dakota. The vast majority of hunters (96%) and residents (83%) agreed hunting is an acceptable way of managing mountain lion populations. Interestingly, 39% of hunters and 40% of residents were neutral that mountain lion hunting is important for South Dakota's economy.

The risks and threats of having mountain lions on the landscape were also captured in the 2024 survey. Hunters and residents were divided on many of these items. A little less than half of hunters (42%) agreed mountain lions pose an unacceptable threat to livestock, 41% of residents disagreed. Similarly, a little less than half of hunters (42%) agreed mountain lions pose an unacceptable risk to pets, while residents disagreed (42%). A little less than half of hunters (42%) agreed mountain lions pose an unacceptable risk to people, while over half of residents (54%) disagreed. In previous surveys, the majority of SD residents disagreed that having mountain lions in SD is too dangerous a risk to people. In 2002, 62 percent of SD residents disagreed mountain lions were too dangerous a risk to people, 25 percent agreed with it and 13 percent neither agreed nor disagreed (Gigliotti et al. 2002). Similarly in 2012, 57 percent disagreed that mountain lions were too dangerous a risk to people, 27 percent agreed and 16 percent neither agreed nor disagreed (Gigliotti 2012). More recently, in 2018, 53 percent disagreed with this statement, 28 percent agreed and 19 percent neither agreed nor disagreed. Over half of hunters (53%) agreed mountain lions pose an unacceptable threat to ungulates, while over half of residents disagreed (52%).

South Dakota residents' concerns for mountain lions killing too many game animals have fluctuated over the years. This fluctuation is likely due, in part, to fluctuations in mountain lion, deer, and elk populations in the Black Hills over the last 16 years. In 2002, a slight majority of SD residents (52%) disagreed with the statement that they were concerned about mountain lions killing too many game animals. One-quarter (25%) were concerned about this and 24 percent neither agreed nor disagreed with this statement (Gigliotti et al. 2002). The proportion of SD residents who indicated they were concerned about mountain lions killing too many game animals jumped to nearly half (45%) in 2012, while one-third (33%) were unconcerned and 22 percent neither agreed nor disagreed with the statement (Gigliotti 2012). In 2018, the proportion of residents who were concerned about this dropped to 33 percent, 42 percent indicated they were unconcerned, and one-quarter (25%) neither agreed nor disagreed that they were concerned about mountain lions killing too many game animals. Black Hills residents were more likely than residents on the prairie (52% compared to 39%) to disagree with this statement (Longmire 2019).

Respondents were also asked whether they would prefer to see the mountain lion population in South Dakota decrease, stay the same or increase over the next five years in the following



locations: Custer State Park [CSP], Black Hills Fire Protection District (excluding CSP) [BHFPD], and Statewide, outside of BHFPD. In CSP, 46% of hunters and 55% of residents wanted the population objective to stay about the same. In BHFPD, 46% of hunters wanted it to decrease to some degree, while 52% of residents wanted it to stay about the same. Statewide, 47% of hunters and 56% of residents wanted the population to stay about the same. In 2002, when mountain lions were still listed as a state threatened species, one-quarter (25%) of residents wanted the mountain lion population to increase to some degree, less than one-third (30%) wanted it to stay about the same, and 17 percent indicated they would like to see the population decrease to some degree. Over one-quarter (28%) were unsure about what the population goal should be (Gigliotti et al. 2002). In 2018 (13 years after the first mountain lion hunting season) residents were asked the direction they would prefer to see mountain lion populations go over the next five years within the Black Hills Fire Protection District and statewide (outside the fire protection district). Over one-third (39%) of residents preferred to see the population in the Black Hills Fire Protection District stay about the same, and 35 percent of residents would like to see the population statewide stay about the same (Longmire 2019). Over one-quarter (29%) of residents would like to see the population decrease to some extent over the next five years statewide, and 21 percent would like to see the population in the Black Hills decrease. A similar proportion of residents would like to see the population in the Black Hills and statewide increase (20% and 17%, respectively). About 20 percent of residents indicated they were unsure about mountain lion population goals over the next five years (Longmire 2019).

Survey results over the past 16 years have consistently shown that the full range of attitudes toward mountain lions exist in South Dakota. This finding is significant in it means managing mountain lions can be controversial, and mountain lion incidents have the potential to become contentious depending on how they are addressed. Understanding how various stakeholders perceive mountain lions in South Dakota is an important component of overall mountain lion management that is responsive to public values.

## **EDUCATION AND OUTREACH**

Mountain lions are a topic of interest and conversation throughout the state. GFP staff provide education and information in both formal and informal settings. This includes, but is not limited to, the Outdoor Campuses (Rapid City & Sioux Falls), GFP offices and parks, teacher trainings, and other staff presentations. While presentations occur throughout the state, they are more frequent in the western portion of the state, especially in and around the Black Hills. GFP will continue to be active in educating area residents, schools, and visitors about mountain lions.

Additional education materials are provided in the form of a GFP brochure entitled “Living with Mountain Lions”. This brochure has information about mountain lions in South Dakota along with general information about the species. A hunter educational brochure entitled “Mountain Lion Identification and Methods of Determining Sex and Age” has also been created to inform hunters in South Dakota about mountain lions, and to assist with field identification on sex and

age. Furthermore, GFP is currently working on an informational brochure which demonstrates successful techniques used to protect chicken and other domestic animals from mountain lions.

## **POPULATION GOALS**

The GFP will manage mountain lion populations and habitats consistent with ecological, social, aesthetic, and economic values of South Dakota citizens while addressing the concerns and issues of both residents and visitors of South Dakota.

The Black Hills population objective is 200-300 total mountain lions, but actual population abundance may range depending on a multitude of factors such as mountain lion vital rates, prey species population densities, mortality factors, public input, and the precision and accuracy of biological monitoring. This population objective range was developed and updated after thorough analyses of mountain lion population data, prey availability, recreational opportunities, livestock depredation issues, human safety and conflict issues, and substantial input from a wide variety of publics with an interest in mountain lion management in South Dakota. GFP will adopt harvest strategies that will allow the mountain lion population to stay within the objective range.

Population objectives for mountain lions on the prairie habitats of South Dakota have not been established. Survey data are lacking for mountain lions on the prairie and these areas are managed primarily to abate potential livestock losses on private property while at the same time to provide recreational hunting opportunity.

## **MANAGEMENT OBJECTIVES & STRATEGIES**

**Objective 1: Monitor and assess mountain lion populations by conducting scientifically based biological surveys within South Dakota.**

- a) Annually survey hunters to estimate harvest statistics.
- b) Annually conduct mandatory checks for all harvested mountain lions to collect and assess harvest and other biological data.
- c) Annually collect and evaluate reported mountain lion mortalities.
- d) Estimate abundance of mountain lion population in the Black Hills.
  - Evaluate alternative methods to improve estimate of abundance.
  - Evaluate alternative indices to improve detection of population trend.
- e) Investigate, document, and collect biological samples from sick and/or dead mountain lions demonstrating symptoms of concern.

**Objective 2: Manage mountain lion populations for both maximum and quality recreational hunting opportunities, considering all social and biological inputs.**

- a) Manage for a sustainable population of mountain lions within the Black Hills of South Dakota.
  - The winter population objective will be 200-300 total mountain lions.
  - Collect scientific-based public input from hunters, landowners, and the general public during every management plan revision to assess public perceptions regarding mountain lion management, better define social tolerance levels, and re-evaluate objectives and strategies.
- b) Modify and adopt hunting season structure as needed to minimize regulation complexity:
  - In the Black Hills Fire Protection District (BHFPD), excluding Custer State Park (CSP): maximize hunting opportunity for unique hunters allowing unlimited boot hunting with harvest regulated primarily through restricted season lengths and harvest limits.
  - In CSP: maximize hunting opportunity for hunters with dogs with harvest regulated primarily through limited permits and restricted season lengths.
  - Outside BHFPD: emphasis to minimize potential human conflicts with mountain lions and maximize hunting opportunity for hunters with dogs allowing unlimited permits and a year-round season.

**Objective 3: Cooperatively work with private landowners, municipalities, and the general public to resolve mountain lion depredation to livestock, human safety concerns, and urban mountain lion conflicts.**

- a) Continue to document and respond to all mountain lion depredation and human safety concerns in a timely manner.
- b) Educate the public and public municipalities on the potential for increased mountain lion human safety issues from feeding deer and other wildlife.
- c) Utilize mountain lion kill permit authority (see *Depredation Management* section) when warranted, to address mountain lion depredation and human safety concerns.
- d) Provide technical assistance to municipalities regarding mountain lion-human conflict management.
- e) Annually collect and evaluate reported mountain lion observations in areas of potential human and/or livestock conflict.

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