

SOUTH DAKOTA ELK ACTION PLAN 2021-2026



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

WILDLIFE DIVISION REPORT 2021-07

SEPTEMBER 2021

This action plan will be used by SDGFP staff on an annual basis and will be formally evaluated at least every five years. Plan updates and changes, however, may occur more frequently as needed. All text and data contained within this document are subject to revision for corrections, updates, and data analyses.

A supportive document to this action plan, the “Management of Elk in South Dakota”, provides a historical background, research, management surveys and monitoring, challenges and opportunities, and citizen involvement related to elk and can be found at <https://gfp.sd.gov/management-plans/>. Additionally, biennial population status updates for elk in South Dakota are available at <https://gfp.sd.gov/elk/> under “Related Documents”.

ACKNOWLEDGMENTS

This plan is a product of substantial discussion, evaluation, and input from many wildlife professionals, constituents, and the 2020-21 South Dakota Elk Stakeholder Group. In addition, comments and suggestions received from private landowners, hunters, and those who recognize the value of elk and their associated habitats were also considered.

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Recommended Citation:

South Dakota Department of Game, Fish and Parks. 2021. South Dakota Elk Action Plan 2021–2026. Completion Report 2021–07. South Dakota Department of Game, Fish and Parks, Pierre, South Dakota, USA.

INTRODUCTION

The elk (*Cervus elaphus*) is the largest hunted member of the deer family (Cervidae) residing in South Dakota. Prior to European settlement, elk once ranged over the entire state of South Dakota but were extirpated by the late 1800s due to unregulated harvest and market hunting. Cooperative transplant efforts between western state and federal agencies began in the early 1900s to re-introduce elk into the Black Hills of South Dakota.

The re-establishment of elk in South Dakota is a wildlife management success story. Today several thousand wild elk roam free, primarily in the Black Hills forested region along with several smaller herds occupying prairie and agricultural landscapes. Public demand for elk hunting and viewing opportunities is strong and continues to increase. According to a public opinion survey completed in 2020 (Wolter 2020), only 25% of elk hunters and 12% of landowners would prefer SDGFP change the current winter elk population objective for Black Hills Elk. Among hunters and landowners that preferred a change to the elk population objective for the Black Hills, 87% of hunters and 58% of landowners preferred an increase in the population objective.

The “*South Dakota Elk Action Plan 2021-2026*” will serve as the guiding document for implementation of actions to ensure elk populations and their habitats are managed appropriately, addressing both biological and social tolerances, while considering the needs of all stakeholders. This plan is intended to guide managers and biologists over the next 5 years but should be considered a working document that will be amended as new biological and social data provide opportunities to improve management of elk resources in South Dakota. Additional information and historical data are included in the “*Management of Elk in South Dakota*” (South Dakota Game, Fish and Parks, 2021). Furthermore, status updates on elk populations are produced biennially for the SDGFP commission, staff, and all interested constituents (Lindbloom et al. 2020).

MANAGEMENT PRIORITIES

Habitat Management

Quantity and quality of elk habitat in the Black Hills affects elk herd distribution, abundance, and productivity. A healthy, productive, and sustainable elk herd requires quality habitat throughout the year. Any loss or degradation of existing elk habitat in the Black Hills may result in a reduction in elk numbers. Unfortunately, elk habitat in the Black Hills is continuing to be impacted and fragmented by a variety of causes, including human development and expansion. Additionally, human disturbance impacts to elk habitat are particularly true on the densely-roaded BBNF. Off-highway vehicle (OHV) use has recently been restricted to designated areas instead of forest-wide; however, enforcement is insufficient and participation in OHV use has increased substantially in recent years.

Forest management practices such as logging, timber thinning, and prescribed burning can either help maintain, enhance, or degrade elk habitat, depending on forest management objectives. Silviculture and vegetation treatments that move a large percentage of even-aged forest to a more diverse pine ecosystem are opportunities to enhance and create habitats for a variety of wildlife, including elk. Recently a significant emphasis has been placed on cutting and thinning pine trees on both public and private lands to reduce the wildfire threats and address mountain pine beetle (MPB) infestations. While opening the forest canopy and reducing tree density improves the growth of understory vegetation and big game forage, additional pine mortality due to insects, disease, weather events, and fire have been substantial in recent years. Coupled with the current timber harvesting emphasis on opening pine canopies and basal areas to 40% or less (Graham et al. 2021), the overall impact these habitat changes will have on elk populations in the Black Hills warrants additional research.

Grazing management on public and private land in the Black Hills, like forest management, can either benefit or degrade elk habitat. Most rangeland in the Black Hills is subjected to annual livestock grazing, with the timing, intensity, distribution, and duration greatly affecting forage quality and quantity available to elk. Grazing practices that consider the habitat needs of elk can be beneficial by rejuvenating areas with decadent vegetation. However, grazing practices that give little or no consideration to elk habitat conditions can result in removal of much needed forage, and a general degradation of habitat quality and quantity. Some rangeland management activities used to benefit grazing practices, such as water developments and fencing, can also indirectly impact elk habitat quality and quantity by affecting rotational cattle grazing practices.

Finally, prescribed burning can also affect elk habitat, depending on timing, intensity, size, weather, and the habitat being treated. If enhancing elk habitat was an objective during a prescribed fire project design, forage quality, quantity, and beneficial cover can be greatly improved. Prescribed burns, both in forest or rangeland habitats, will remove overgrown, decadent vegetation, and create openings that can improve elk forage. However, fire results in short-term impacts to browse and forage. Further, poorly timed fires, drought, and invasive weeds can result in less desirable vegetative response overall.

Population Surveys

The SDGFP conducts several surveys and assessments to better understand elk population abundance and trends in the Black Hills. Surveys are completed annually or periodically to assess harvest, disease, herd composition, reproduction, survival, and abundance.

Hunter surveys and mandatory elk check-ins are conducted annually to estimate harvest, hunter success and satisfaction, and harvested elk age structure. Minimum harvest success thresholds (60%) for hunters with “any elk” licenses in the Black Hills collectively and CSP, originally established in the South Dakota Elk Management Plan (South Dakota Game, Fish and

Parks, 2015), have been met or exceeded since 2015 (Table 1). To maintain the hunt quality that South Dakota elk hunters currently experience and expect, future thresholds for hunter success will be increased to 75%.

Table 1. Hunter success rates for firearm elk hunters with “any elk” (Type 21) licenses in the Black Hills (H1A-H9A) and Custer State Park (CU1), 2015-2020.

Unit/Type	2015 Success	2016 Success	2017 Success	2018 Success	2019 Success	2020 Success
H1A-21	61%	72%	78%	73%	76%	83%
H2A-21	84%	88%	84%	77%	79%	87%
H3A-21	74%	83%	78%	77%	82%	80%
H4A-21	NA	88%	88%	88%	100%	100%
H5A-21	80%	80%	50%	50%	75%	75%
H7A-21	100%	81%	94%	89%	100%	75%
H9A-21	100%	60%	100%	44%	100%	88%
Black Hills	79%	84%	82%	76%	81%	85%
CU1-21	100%	89%	88%	50%	89%	89%

In addition, harvest age thresholds were established in the South Dakota Elk Management Plan (South Dakota Game, Fish and Parks, 2015). Specifically, these thresholds were to “Manage combined Black Hills elk management units for an average minimum bull harvest age structure of 30% bulls 4+ years of age and manage CSP for a minimum of 60% bulls 4+ years of age”. These thresholds have been met and exceeded in most years since 2000 (Figure 1). Since the last elk management plan in 2015, a new, more accurate aging technique (cementum annuli) has identified that previously (<2017) estimated elk ages based on tooth wear were underestimated. As a result, the bull harvest-age objective in the Black Hills has been adjusted from 30% 4+ year old bulls to 60% 4+ year old bulls to reflect the corresponding age-structure from cementum annuli techniques. In CSP, the harvest age structure objective will remain at 60% bulls 4+ year old bulls.

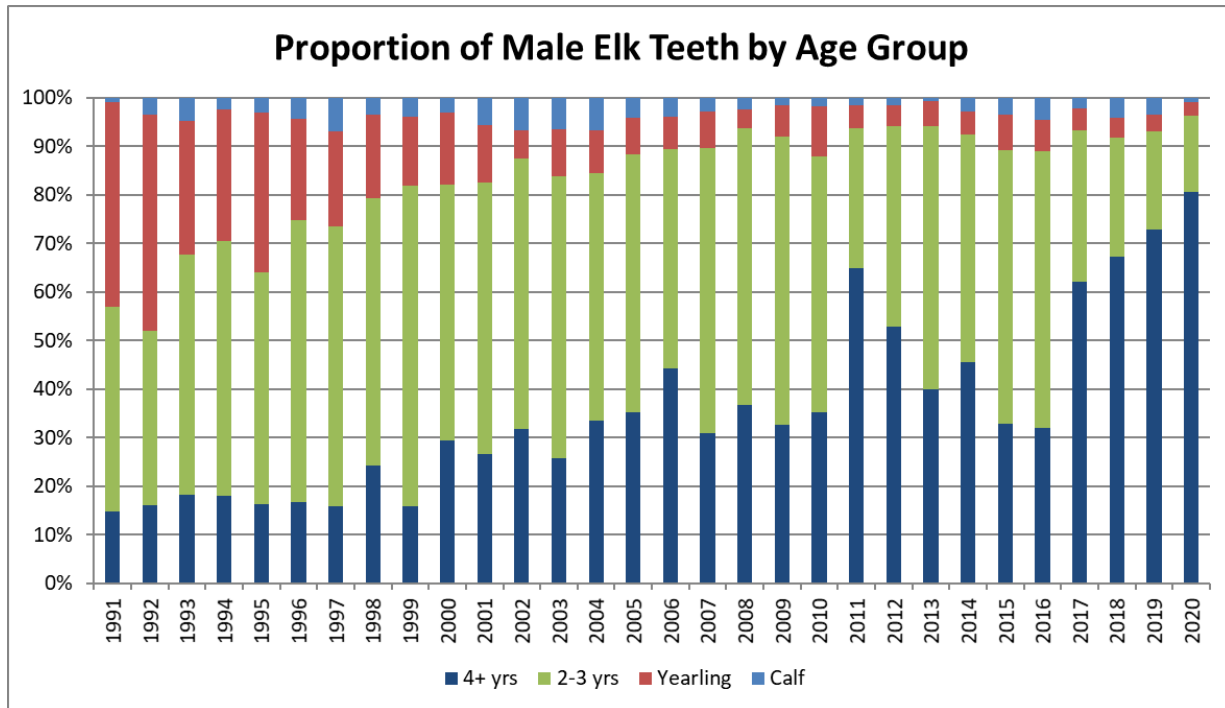


Figure 1. Age proportions of harvest bulls in the Black Hills, 1991-2020.

Herd composition surveys are completed annually and provide critical information on fall recruitment and bull to cow ratios of the elk herd. Periodic capture and radio collaring efforts provide an opportunity to gather important data on survival rates; monitoring of radio collared adult cow elk survival provides insights on the impacts of antlerless harvest rates and population trends. In addition, herd composition data and survival estimates are used for annually projecting elk populations between abundance surveys.

Sightability surveys are completed every four years and provide periodic abundance estimates of wintering elk herds, and important “anchor points” for population models. Aerial surveys completed in the winter of 2019/2020 resulted in an estimate of approximately 6,500 elk in the Black Hills and 450 elk in Custer State Park.

Depredation Program

South Dakota Game, Fish and Parks understands that cooperative partnerships with private landowners are an essential component to elk management and private lands serve an important role regarding elk management in South Dakota. The demand for elk damage abatement services fluctuates annually due to weather events (e.g., drought or harsh winters) and seasonal variation, elk populations, and changes to elk habitat (e.g., impacts of fires, agricultural development, logging practices, and human encroachment).

SDGFP has designed its elk damage abatement programs to address requests for assistance from private landowners. The most widely used program to address crop damage is cost-share assistance for growing-season food-plots. Landowners that have elk-use in alfalfa fields or other crop fields are eligible for up to \$8,000 of cost-share assistance to establish and manage these fields, annually. Additionally, producers experiencing elk-use on fields raised to produce grass hay are eligible for up to \$4,000 of cost-share assistance for maintenance of those fields. Another program that provides long-term solutions is the permanent stackyard (i.e., protective fencing) and protective panel program. For these programs, landowners are reimbursed for materials to construct a permanent stackyard or purchase protective panels, up to a maximum of \$15,000. Another program available to landowners is cost-share assistance for the replacement of fence materials because of damage caused by elk crossing fences. When elk cross barbed-wire fences, they can cause substantial damage to the fence (Bauman et al. 1999). SDGFP has utilized aircraft-grade aluminum cable strung along the top of fences to reduce the damage caused by elk when crossing the fence. This technique has proven successful if the area where the cable is applied has a fence in good condition with an adequate number of wooden posts. SDGFP also provides replacement posts and wire to cooperating landowners. Cooperating landowners are limited to \$15,000. Depending upon individual needs and available funding, some landowners may be eligible for multiple stackyard and/or fencing contracts over several years.

Finally, while grazing competition between livestock and elk exists in South Dakota, most sportsmen/women and landowners agree that it is possible to manage effectively for both. Longmire (2014) found that 82% of hunters and 80% of landowners agreed that it is possible to manage for both elk and livestock grazing in the Black Hills. Current elk depredation abatement programs do not address requests for assistance regarding grazing impacts to pastures or meadows, under most circumstances. However, SDGFP has provided hazing devices (i.e., propane cannons and pyrotechnics) and technical assistance to landowners that have concerns of elk grazing on grasslands. If these conflicts occur near or during on-going hunting seasons, SDGFP will coordinate with landowners and hunters to increase harvest and hazing pressure in these areas.

POPULATION OBJECTIVES

The winter population objective for elk is 6,000-8,000 (2.1-2.8 elk/sq mi) in the Black Hills and 500-600 (4.5-5.5 elk/sq mi) in Custer State Park. The Black Hills elk population objective was based on a compromise between maximizing cattle grazing opportunity and elk hunting and viewing opportunities. The CSP elk population objective was previously managed near ecological carrying capacity because objectives are to maximize hunting and viewing opportunity in CSP. Because CWD prevalence may increase at a faster rate when ungulate densities are higher (Sargeant et al. 2011, Jennelle et al. 2014), previous CSP population objectives of 700-900 (6.4-8.2 elk/sq mi) have been reduced to 500-600 (4.5-5.5 elk/sq mi) in an attempt to reduce the rate of increase of CWD prevalence in the Black Hills ecosystem. Actual

population abundance and estimates may vary within these objective ranges depending on a multitude of factors such as range conditions, elk vital rates, predator densities, other ungulate densities, public input, and the precision and accuracy of biological monitoring. These population objectives were developed and updated after thorough analyses of elk population data, available habitat resources on public land, private land depredation issues, recreational opportunities, and substantial input from a wide variety of publics with an interest in elk management in South Dakota (SDGFP 2021). SDGFP will adopt harvest strategies that allow the elk population to stay within these objective ranges. During periods of drought and subsequent low forage production that last more than one year, SDGFP will set harvest management strategies that move the elk population towards the lower end of the population objective range. Similarly, during periods of above normal precipitation and forage production, SDGFP will manage elk populations towards the upper end of the objective range.

Elk residing in the Black Hills are known migrators and often gather in large concentrations during winter months on established wintering grounds; approximately 50% of all elk estimated during 2020 aerial surveys were in Black Hills elk hunting Unit 2, which contains much of the Jasper fire burn area. Estimates of elk distribution in other seasons (i.e., spring, summer, fall) remain unknown, therefore individual elk management units are managed to increase, maintain, or decrease elk populations without specific population objectives. Management unit objective direction (Figure 2) is based on an annual collection and evaluation of biological data, habitat conditions, and social data.

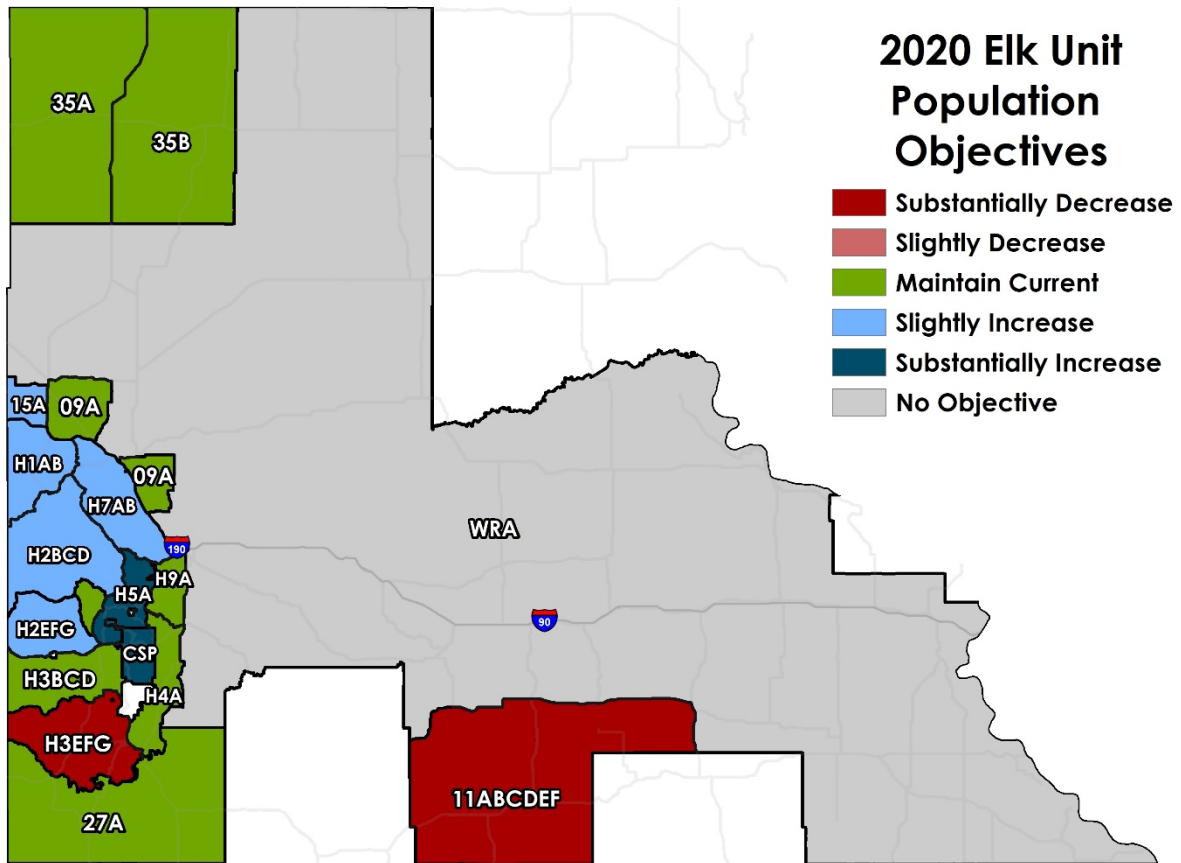


Figure 2. 2020 elk management unit objective directions.

Population objectives for prairie elk units are also specific to desired management unit objective direction and not specific densities. Survey data are lacking for most prairie units and elk densities are primarily managed to abate substantial agricultural damages on private property while at the same time provide recreational hunting opportunity. Management unit objective directions (increase, maintain, decrease) for each prairie elk unit are evaluated biennially (Figure 2). Because of varying densities and landownership, the objective in WRA will be undefined and antlerless elk licenses will be allocated to address damage caused by elk or to affect social tolerance.

MANAGEMENT STRATEGIES

1. Maintain, manage, and protect existing elk habitat throughout the Black Hills.
 - A. Based on habitat conditions and population densities, in concert with input from the public and BHNF range conservationists, periodically evaluate if adjustments to management unit objective directions are warranted.
 - B. Biannually (when developing season recommendations in February and again in mid to late summer) evaluate environmental and range conditions for impacts from drought, wildfires, etc. to determine if harvest management strategies are appropriate for range conditions.
 - C. Utilize a pool of “antlerless elk” contingency licenses (ARSD § 41:06:26:06; up to a maximum of 20% of all “antlerless elk” licenses available for all combined Black Hills elk hunting units) that would be issued by GFP Commission resolution in September if summer range conditions dictate an adjustment is needed in the harvest management strategy adopted by the GFP Commission earlier in that year. Summer range conditions will be based on forage production estimates produced by the USDA Natural Resources Conservation Service (NRCS), and contingency license allocation based on forage and unit objective directions as outlined in the decision support table below (Table 2).

Table 2. Elk unit contingency license decision support table.

	<i>Contingency Licenses</i>		
NRCS Forage Production	<i>(% of current year unit antlerless allocation)</i>		
<i>(% of normal/per elk unit)</i>	Decrease Obj	Maintain Obj	Increase Obj
90-100%	<i>none</i>	<i>none</i>	<i>none</i>
80-89%	<i>10%</i>	<i>5%</i>	<i>none</i>
70-79%	<i>15%</i>	<i>10%</i>	<i>5%</i>
<70%	<i>20%</i>	<i>15%</i>	<i>10%</i>

2. Manage for biologically and socially acceptable elk populations in each elk management unit within the Black Hills, CSP, and Prairie units of South Dakota.
 - A. Assess and monitor elk population levels and trends by completing winter aerial surveys in all Black Hills elk management units every 4 years.
 - B. Use population modeling to estimate elk population trends of Black Hills elk in years with no aerial survey data.
 - C. Annually conduct and assess Black Hills fall herd composition surveys.
 - D. Annually survey hunters to estimate elk harvest and distribution, age of harvested elk, number of hunters, hunter success, and hunter satisfaction.
 - E. Biennially assess elk unit management unit objective directions and utilize necessary harvest management tools to ensure objectives are met.

- F. Monitor and evaluate Chronic Wasting Disease in wild elk herds in South Dakota as determined by the South Dakota Chronic Wasting Disease Action Plan found at <https://gfp.sd.gov/chronic-wasting-disease/> under “Related Documents”.
 - G. Manage for overwinter elk population of 6,000-8,000 elk in the Black Hills and 500-600 in CSP.
 - H. Manage for a minimum of 75% hunter success for hunters with “any elk” Black Hills and CSP firearm license types.
 - I. Manage Black Hills elk hunting seasons (firearm and archery combined) and CSP elk hunting seasons (firearm and archery combined) for an average bull harvest age structure of 60% bulls 4+ years of age.
 - J. Maintain maximum elk hunting opportunities in the Black Hills by allocating 25% of total “any elk” licenses and 10% of total “antlerless elk” licenses available in the Black Hills as archery licenses, with the remainder (75% any-elk and 90% antlerless elk) issued as firearm licenses.
 - K. Maintain maximum elk hunting opportunities in CSP by allocating 25% of “any elk” licenses available in CSP as archery licenses, with the remainder (75%) issued as firearm licenses. Antlerless management will be conducted using firearm hunters.
3. Cooperatively work with private landowners to resolve elk depredation to growing crops, stored-feed supplies, and private property.
- A. Respond to all elk depredation concerns on private land in a timely manner.
 - B. Continue to utilize elk depredation pool hunts (ARSD § 41:06:52) when warranted, to address elk depredation concerns.
 - C. Expand hunting opportunities where/when possible to address elk depredation on private lands.

Please refer to the Management of Elk in South Dakota (<https://gfp.sd.gov/management-plans/>) for additional information related to achieving the management priorities.

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