Black Hills Deer

Management Plan

2008 – 2017

Adaptive Management System

Game Program

Division of Wildlife
South Dakota Department of Game, Fish and Parks

About this Document

This document is for general, strategic guidance for the Division of Wildlife (DOW) and serves to identify the role that the DOW plays, how we function and what we strive to accomplish related to **Black Hills Deer Management**. The planning process is more important than the actual document. By itself this document is of little value; the value is in its implementation. This process will emphasize working cooperatively with interested publics in both the planning process and the regular program activities related to Black Hills deer management.

Important sections of this plan include:

- Brief historical description of deer in the Black Hills
- History of past management seasons and recent changes in management direction
- Bibliography of recent research studies on Black Hills deer
- Results of public opinion and attitudes to recent management direction
- Guiding philosophies for management of Black Hills deer
- Management goal with Objectives and Strategies to accomplish the goal

While this is a ten-year planning process, this document is **Version 08-1** (year-consecutive number) of the **South Dakota Black Hills Deer Management Plan 2008 – 2017.**

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Introduction

White-tailed deer (*Odocoileus virginianus*) are one of the most widely distributed big game animals in the western hemisphere from near tree-line in Canada (60 degrees north latitude) to sub-equatorial South America (15 degrees south latitude). Currently there are 30 subspecies delineated in North and Central America. The subspecies in the Black Hills of South Dakota is *dakotensis*.

The first expeditions into the Black Hills reported an abundance of game with deer being the most numerous. In 1874, Ludlow reported deer to be abundant. In his memoirs during 1876, Richard Hughes wrote that "Everywhere there were signs of an abundance of big game, bear, deer, elk and mountain sheep".

In 1875, an expedition of 400 soldiers led by Lt. Col. Richard Irving Dodge entered the Black Hills. Dodge reported that Black-tailed deer were found in considerable numbers, but Red deer were more abundant than any other animal. Dodge reported that on Spring Creek they found "a great many deer, though the miners were rapidly exterminating them. Castle Creek and the other tributaries of Rapid Creek abounded in deer, while on the main Rapid Creek itself there are very few. On the heads of Box-Elder we found deer in very great numbers". Dodge noticed a difference in size of the red deer in the Black Hills. He reported that "I killed near Rapid Creek two enormous bucks, each of which, after disemboweling, and having head and legs cut off, weighted nearly one hundred and thirty pounds. In the hunt on Box-Elder, one of the guests killed a buck just as old and just as fat as those killed by me on Rapid, but which, dressed in the same way, weighted scarcely forty pounds". Dodge did conclude though that "they are undoubtedly the same animal, as the large and small are found running together in herds or bands".

As Dodge traversed through the Black Hills he mentioned finding what he called "Black-tailed deer in considerable number" at the north rim. In current times mule deer can be found throughout the hills but tend to concentrate in the northern hills, the mountain mahogany country west of Custer, and surrounding foothills. Even though he reported an abundance of deer, he did note an "extraordinary number of barren does, even in those portion of country where deer are most plenty". The expedition killed approximately 1,000 deer during their exploration of the hills. Dodge further reported that from the moment the expedition entered the Hills "scarcely a day passed without our seeing some of these beautiful animals".

By 1880, the deer herd was greatly diminished due to prospectors, market hunters and settlers that had come to the Black Hills with the discovery of gold. Wagon loads of deer and elk arrived daily in Deadwood to feed the miners. In December 1878 the **Black Hills Weekly** reported that "if the market hunters kept killing off the game at the current rate, they would be looking for different employment the next year". Not only were market hunters keeping Deadwood in deer meat, it was reported that the same conditions were occurring in other camps throughout the hills. Due to the rapid demise of the deer numbers, in 1883 the Government of the Dakota Territory prohibited hunting from January 1 to September 1. However, it was not until the enactment of the "buck law" in 1911 and 1921 that deer numbers started to rebound.

Historical Management

The Black Hills had hunting seasons prior to 1929, however the records are vague on season dates and numbers of hunters. From 1929 through 1946 license sales ranged from 2,242 to 9,869. From the late 1940's through the mid 1990's licenses sales ranged from 8,990 to 18,500, with the exception of 1953 when 31,141 licenses were sold. Season structure varied considerably during the 1950's, 1960's and 1970's with various season dates, license types offered, and sub-units within the hills. In fact, the season changed from year to year with various combinations of dates, license types, and sub-units with very little consistency. During these years license numbers were unlimited with the exception of 1968 and 1969 which had limited antlerless tags (Table 1). It was not until the mid 1970's that the season structure stabilized to Nov. 1-30 unlimited licenses for bucks only Hills-wide with subunits for limited antlerless harvest.

During the late 1980's and early 1990's hunters began asking the Department of Game, Fish and Parks to change the Black Hills deer season structure. Their reason behind the requested change was due to the perception of too few bucks, lack of large antlered bucks and poor condition of the deer herd. As a result of these requests, the Division of Wildlife in conjunction with South Dakota State University embarked on numerous research studies to determine the status of the Black Hills deer herd (Appendix I). In addition, a random survey was conducted in 1993 of 1,000 Black Hills deer hunters. The survey results indicated only a 6% difference in those who favored a change to those who did not. A citizen task force of nine individuals was then assembled to hold public meetings around the state. Seven public meeting were held with 68% of the public attending supporting a change. Forty-one alternatives for change were considered. Most of the alternatives fell into 10 groups:

1. Shorten the season length.
2. Limit the number of buck licenses.
3. Create hunting units for bucks in the hills.
4. Modify the doe harvest.
5. Raise license fees.
6. Limit license sales.

7. Increase law enforcement.
8. Institute point restrictions.
9. Increase predator control.
10. Work with the U.S. Forest Service to improve deer habitat.

The task force considered all alternatives and proposed a season with two license types a hunter could apply for:

Type 1 – Hills-wide 30 day season in November for bucks with limited licenses available by application and a 2 points or more on one side restriction with an additional 8% of these licenses being available for nonresidents.

Type 2 – An any deer license with limited number available by application valid only in specific hunting units for a 10-day season with an additional 8% available to nonresidents.

Although the change was controversial, it was favored 2-to1 by Black Hills deer hunters, and passed by the Department Commission starting for the 1996 deer season.

In order to determine if the change increased the satisfaction of the Black Hills deer hunters, the Division of Wildlife began surveying a random sample of hunters (Appendix II).

Current Status

Since 1996, a few minor changes have occurred for the Black Hills deer season structure. For the 2006 hunting season, the 5,500 buck with 2 point or better was changed to 5,500 buck with 2 points or better or antlerless. The last change occurred for the 2007 season: removal of the 2 point restriction, and changing the limited number of any deer licenses to 5,000 any white-tail and 500 any deer. The removal of the 2 point restriction was slightly controversial with some hunters, however through public involvement it was explained that it was not the 2 point restriction that increased the mature buck numbers, it was limiting the number of licenses that increased both buck numbers and older bucks. In addition, the change from 5,500 any deer to 500 any deer is a management change to decrease the mule deer buck harvest in an attempt to increase the buck to doe ratio for mule deer. The current structure of the season is for the month of November with four license types available: any deer, any white-tailed deer, any antlerless deer, and any antlerless white-tailed. During the 2007 hunting season, license numbers included: 500 any deer, 5000 any white-tailed, 500 any antlerless, and 2,250 any antlerless white-tailed licenses with an additional 8% available for nonresidents for each license type. Recent license numbers, success rates, and harvest have changed due to the dramatic change in season structure (Figure 1).

Management

Determining exact population numbers of deer in a pine forest with approximately 70% canopy cover has yet to be developed. Without methodology for censusing Black Hills deer numbers, only estimates can be made for total numbers. Current estimates place the deer herd at 12,000 mule deer and 50,000 white-tailed. These estimates are based on fall fawn/doe surveys, harvest data, and population modeling. Licenses issued are determined by population trends and goals developed by the DOW. Management considerations include (not in order of importance): habitat quality and quantity; depredation on private lands; adequate population numbers to insure sustainability; and public acceptance of management direction. Current methodology to determine population trends include: fawn recruitment into the population determined by fall fawn/doe surveys, hunter success, age structure of harvested deer, landowner tolerance of current population, available forage, and estimated population numbers.

Issues and Concerns

There are many issues concerning Black Hills deer management. Some issues are consistent with other big game concerns in the Black Hills, while some are specific to deer.

Current management scheme

The current management scheme demonstrates that the hunting public is satisfied with the overall change that occurred in 1996. However, the changes in 2007 of eliminating the 2 point restriction and limiting the number of any deer tags to increase the mule deer buck to doe ratio may decrease hunters satisfaction and require further modification of season structure. Hunter satisfaction surveys will continue.

Depredation Issues

Depredation on private lands varies year from year due to winter severity and location in the Black Hills. The Northern Hills has experienced more depredation in recent years caused by mule deer, than the rest of the hills. Strategies to reduce depredation through harvest should therefore focus on regional areas other than be used hill wide. Efforts should be made to address individual depredation complaints on private lands in a timely manner. In recent years, deer complaints with city limits have grown. Rapid City has worked with the DOW for over a decade on a deer removal plan. The DOW has recently worked with the cities of Edgemont, Hot Springs, Whitewood, and Custer on “city deer” management plans. Due to the lack of hunting opportunities within city limits, these plans generally entail deer removal by sharpshooters hired by the city. Since the majority of the deer within city limits are “residents”, an increase in harvest on surrounding National Forest land has little or no effect on city deer numbers.

Habitat Issues

The Black Hills National Forest Service manages the habitat within the Black Hills while the DOW manages game population numbers. Numerous studies have been conducted by South Dakota State University and DOW on the effects of timber management practices, fire, grazing competition, available cover, forage production, diet quality, and nutrition on the deer population for the different habitat types found in the Black Hills (Appendix I).

In the northern Black Hills, white-tailed does selected mature and immature aspen habitat types in the spring, while fawns avoided aspen habitats and selected for open meadow types with mean grass height of 39 inches for bedsites. Silverculture practices would therefore need to recognize the need for open meadows near aspen habitat. In addition, white-tailed deer selected for habitat types with canopy cover greater than 70% for winter loafing sites. In the central Black Hills as the northern, white-tailed deer selected for canopy cover greater than 70% during the winter for thermal cover, but fed in habitat types with less than 40% canopy cover. Fawns once again used open meadow type habitats for summer use, once again suggesting a mosaic of pine and meadow habitat within close proximity to each other. It was recommended to increase the deciduous and shrub habitat types in the central Black Hills. In the southern Black Hills, white-tailed deer selected for habitats with a shrub understory component during the summer, and canopy cover greater than 40% during the winter. Current timber harvest standards and guidelines, however, call for growing basal area levels ranging from 60 to 80 hills wide (Black Hills National Forest 1983) precluding a mosaic of deciduous, dense pine, open meadow and shrub habitats throughout the Black Hills that is required for deer habitat.

Suppression of fire in the Black Hills has also decreased quality deer habitat. Studies in the northern and central hills have determined the deer are in poor condition. In the central hills, the deer have low body weights and low reproductive rates. The northern Black Hills deer are characterized to be in better nutritional condition, due to food plots on DOW lands and the availability of private agricultural lands. In August 2000, the Jasper fire burned over 86,000 acres of pine forest in the southern Black Hills. Within 3 years of post burn, nutritional condition of both mule deer and white-tailed deer were greater in the burned habitats than the unburned habitats. In addition, competition of elk and cattle with white-tailed deer was reduced during summer in the burned habitat. Changing current timber harvest standards and guidelines, and the introduction of fire within the Black Hills would greatly increase the quality of Black Hills deer habitat by providing increased deciduous and shrub habitat components and providing more forage for livestock and wildlife further reducing forage competition.

A methodology to determine standing herbage and utilization has been developed for the central and southern Black Hills that is both accurate, precise, inexpensive and man hour conservative. The methodology was developed during 2008 for the northern hills. With the adoption of this methodology, the Black Hills National Forest could better manage grazing allotments to provide adequate forage for deer during the summer and winter months requirements and maintain a healthier rangeland.

The DOW will continue to work closely with the Forest Service on habitat issues relative to habitats selected by deer in each region of the hills.

Disease Issues

Chronic Wasting Disease (CWD) was discovered in several private captive elk herd within the Black Hills during 1997-1998. In 1997 the Division started testing sick and hunter harvested deer and elk in the hills. As of May 2008, a total of 4,665 white-tailed deer and 982 mule deer have been tested with only 6 white-tailed deer and 2 mule deer testing positive for the disease in the Black Hills management area. Further testing will be evaluated on an annual basis.

Survey Needs

Recruitment of fawns affects availability of deer for harvest. Based on pregnancy and fecundity of deer in the hills, recruitment varies due to winter conditions and forage availability. Low fawn/doe indices have been documented after years of deep, persistent snow and in regions (central hills) with poor forage resources.

Management surveys to determine fall fawn recruitment by hunting units are conducted in the Black Hills as with the rest of the state. Time and personnel have been inadequate in the recent past to gather sufficient data. Time and staff to conduct this survey to determine recruitment rates needs to be a high priority. An additional survey to determine population trends in addition to the recruitment survey needs to be developed.

Guiding Philosophies of the Department of Game, Fish and Parks, Division of Wildlife

Values are deeply held beliefs. They form the salient basis for all decisions, actions and attitudes. Agencies do not have values; people do. The following statement reflects the collective values of the people who are the Division of Wildlife in relation to Black Hills deer management.

WE BELIEVE

- that wildlife, including Black Hills deer, contributes significantly to the quality of life in South Dakota and therefore must be sustained for future generations.
- that recreational hunting is a legitimate use of Black Hills deer, and must be encouraged and preserved.
- that the stewardship role played by landowners in the Black Hills is critical to the future of deer and deserving of recognition and respect.
- that damage to agricultural crops and stored livestock food by deer is a legitimate reason to control deer population below the biological carrying capacity of some areas.
- in the management of wildlife in accordance with biologically sound principles.
- that reasonable regulations are necessary for equitable distribution of the benefits of wildlife, including deer, and to promote ethical and safe behavior.
- that the future of wildlife, including Black Hills deer, depends on a public that appreciates, understands and supports wildlife and in the publics' right to participate in decisions related to wildlife issues.

Black Hills Deer Management Goal

Goal for Black Hills deer management is to maximize user opportunity while maintaining populations consistent with ecological, social, aesthetic, and economic values of the people of South Dakota and it's visitors.

1. Annual Objectives and Strategies:

Objective 1.1 Annually determine status of Black Hills deer populations, evaluate the Black Hills deer season and manage population numbers via harvest.

Strategy a.	Continue fall survey to determine fawn/doe ratios.
Strategy b.	Evaluate survey results, harvest numbers and success for each species of deer by unit
Strategy c.	Produce document of population goals (increase, decrease or maintain) by species for each management unit.
Strategy d.	Allocate types and numbers of deer hunting licenses which result in a harvest directed at manipulating the deer population toward management unit goals.
Target:	Maintain population numbers consistent with available habitat.

Objective 1.2 Address Black Hills deer depredation on private land to reasonably satisfy the majority of annual complaints.

Strategy a.	Respond to depredation complaints in a timely manner as set forth in guidelines. Evaluate effectiveness annually.
Strategy b.	Continue to evaluate new methodology use to combat complaints.
Strategy c.	Insure sufficient materials are on hand to address depredation complaints.
Product:	An annual report on depredation costs and activities

Objective 1.3 Address disease issues with the Black Hills deer herd.

Strategy a.	Continue disease testing for various vectors of all sick deer.
Product:	Annual report on effort and results.

Objective 1.4 Address habitat issues on the Black Hills National Forest and private lands.

Strategy a.	Annually meet with Black Hills National Forest personnel on habitat issues to increase quality habitat consistent with population goals.
Strategy b.	Work with private landowners through the Divisions private lands section to improve habitat on private lands to alleviate depredation on crops. The Division's private lands habitat biologist will meet with landowners at the annual landowners meetings held around the Black Hills.
Strategy c.	Continue the improvement of habitat conditions on DOW lands (3,000 acres) by thinning pine and re-establishing the shrub-hardwood

component, and planting spring and winter food plots to alleviate and minimize depredation on adjacent private lands.

Objective 1.5 Annually evaluate management plan, and up-date plan as needed.

Strategy a. Annually meet with local sportsman's groups and landowners to discuss Black Hills deer management.
Target: Maintain a minimum of 80% satisfied hunters or less than 10% dissatisfied hunters measured via a valid scientific survey.

2. Development/Improvement (project) Objectives and Strategies:

Objective 2.1 Develop fall/winter survey to determine population trends by 2011.

Strategy a. Several current survey techniques used by other state agencies will be tested for validity within the Black Hills.
Product: Once a survey technique has been developed, an annual report on results.

Objective 2.2 Review and evaluate depredation policy and guidelines annually.

Strategy a. Division personnel will evaluate policy and effectiveness of methodologies used to alleviate depredation.
Product: If current policy or methodologies are insufficient, new ones will be developed.

Objective 2.3 Evaluate results of past years CWD testing of hunter harvest and sick surveillance annually.

Strategy a. Results of testing will be evaluated by department personnel for trend data.
Product: Annual report on efforts and results.

Objective 2.4 Develop a process to keep the public informed of Black Hills management issues in South Dakota.

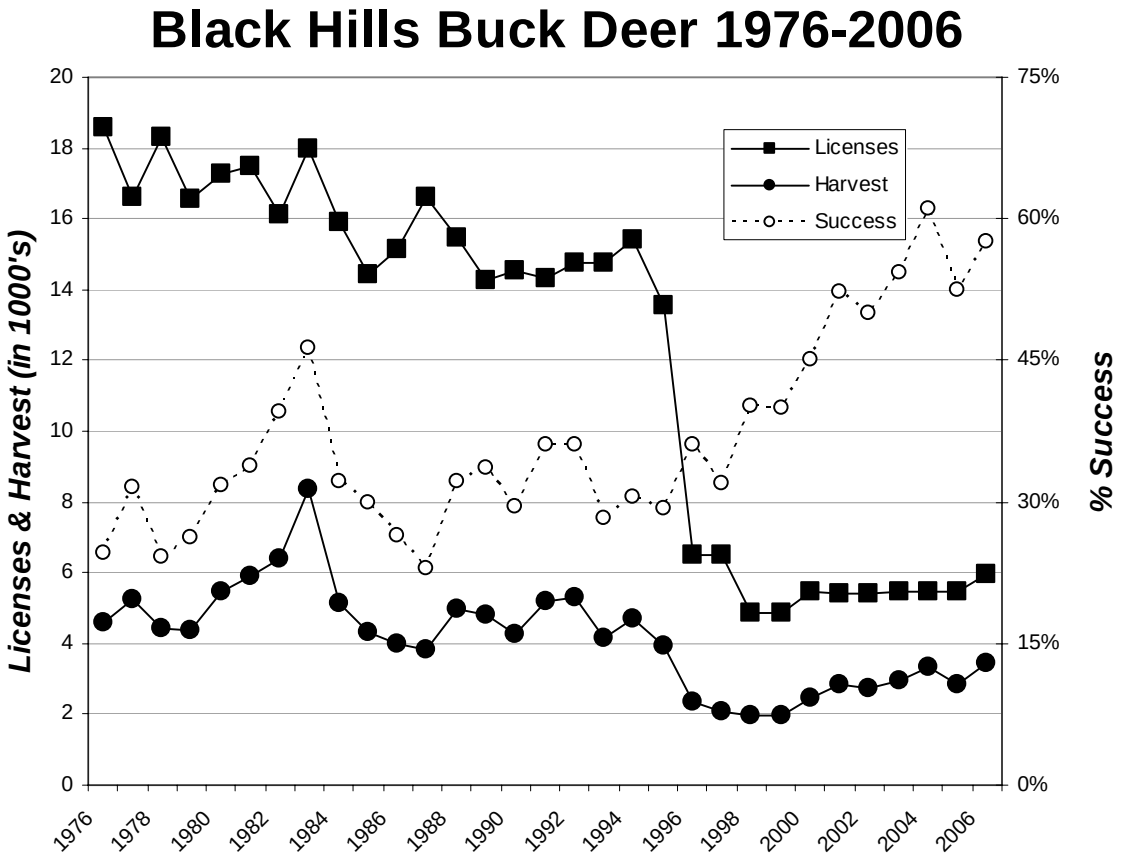
Strategy a Wildlife Conservation Officers and the Regional Game Manager will meet annually with local sportsmen's groups and landowners to discuss management objectives and issues.
Strategy b. Work with Regional Advisory Panel on management objectives and issues.

Table 1. Black Hills Deer Season Structures, 1950 – 1973

Year	Season Dates	License Types
1950	November 1-20	Bucks 2 or more points
1951	November 1-20	Bucks
1952	November 1-10	Bucks only
	November 11-20	Any deer
1953	November 1-30	2 Any deer(Northern Hills)
	November 1-30	2 Any deer or
		1 Elk and 1 any deer
		Central & Southern Hills
1954	November 6-28	Any deer
1955	November 5-13	Any deer or elk
		Northern Hills
	November 14-26	Buck deer or Bull elk
		Central Hills
	November 5-26	Buck deer or Bull elk
1956	November 9-2	Any deer
	November 13-25	Buck deer
		Northern Hills
	November 9-25	Buck deer or Bull elk
		Central and Southern Hills
1957	November 2-7	Any deer
	November 8-30	Buck deer
		Western half of hills
	November 2-30	Bucks only
		Eastern half of hills
1958	November 1-25	Buck deer
1959	November 7-15	Any deer
	November 16-30	Buck deer
		Northern hills
	November 7-30	Buck deer
		Central and Southern hills
1960	November 11- Dec.4	Buck deer
1961	November 1-5	Any deer
	November 6-30	Buck deer
1962	November 1-30	Any deer
		Northern hills
	November 1-15	Any deer
	November 16-30	Buck deer
		Central Hills
	November 1-30	Buck deer
		Southern Hills

Table 1. cont.

Year	Season Dates	License Types
1963	November 1-11	Any deer
	November 12-25	Buck deer
		Northern hills
	November 1-25	Buck deer
		Southern and Central hills
1964	November 1-30	Buck deer 2 point or better
1965	November 1-7	Any deer
	November 8-30	Bucks 2 point or better
1966	December 1-11	Doe deer
		Northern hills
	November 1-30	Buck deer
		Central hills
	November 1-18	Buck deer
	November 19-30	Any deer
		Southern hills
1967	November 1-30	Any deer
		Western half of hills
	November 1-22	Buck deer
	November 23-30	Any deer
		Eastern half of hills
1968	December 21-31	1200 antlerless deer
		North-central hills
	November 1-31	Any deer
		Remainder of hills
1969	November 1-9	2600 antlerless deer
		North-central hills
	November 1-30	Any deer
		Remainder of hills
1970	November 1-30	Buck 2 points or better
1971	November 1-30	Buck deer
1972	November 1-30	Buck deer
	November 26-30	Any deer


Black Hills Buck Deer 1976-2006
Licenses & Harvest (in 1000's)
% Success
Licenses
Harvest
Success
0
2
4
6
8
10
12
14
16
18
20
0%
15%
30%
45%
60%
75%
1976
1978
1980
1982
1984
1986
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006

Appendix 1: Publications related to Black Hills deer

Backman, P. A., D. E. Hubbard, J. A. Jenks, and L. M. Gigliotti. 1999. 1998 Black Hills Hunter Survey: Special group hunting section. HD-4-99.SAM. South Dakota Department of Game, Fish and Parks, Pierre. 43pp.

Backman, P. A., D. E. Hubbard, J. A. Jenks, and L. M. Gigliotti. 2001. The importance of the social aspects of hunting: a comparison between resident and non-resident 1999 Black Hills deer hunters. *South Dakota Academy of Science* 80:267-282.

Backman, P. A., J. A. Jenks, D. E. Hubbard, and L. M. Gigliotti. 2000. 1999 Black Hills Hunter Survey: Special group hunting section. HD-8-00.SAM. South Dakota Department of Game, Fish and Parks, Pierre. 99pp.

Benzon, T.A. 1996. Mortality and habitat use of white-tailed deer fawns in the northern Black Hills, South Dakota, 1991-1994. Completion Report, Federal Aide to Wildlife Restoration, Job W-75-R-34. 41pp.

Benzon, T.A. 1998. Mortality and habitat use of white-tail deer fawns in the central Black Hills, South Dakota, 1994-1998. Completion Report, Federal Aide to Wildlife Restoration, W-75-R-34. 7567. 48pp.

DePerno, C. S. 1998. Habitat selection of a declining white-tailed deer herd in the central Black Hills, South Dakota and Wyoming. Ph.D. Dissertation, South Dakota State University, Brookings, South Dakota.171pp.

DePerno, C. S., S. L. Griffin, and J. A. Jenks. 1995. Capturing white-tailed deer in the central Black Hills. *South Dakota Conservation Digest* 63:18-21.

DePerno, C. S., S. L. Griffin, and J. A. Jenks. 1996. Black Hills white-tails: Importance of horizontal cover to female white-tailed deer in the central Black Hills. *South Dakota Conservation Digest* 63(5):4-6.

DePerno, C. S., S. L. Griffin, J. A. Jenks, and L. A. Rice. 1999. How well do white-tailed deer survive in the central Black Hills? *South Dakota Conservation Digest* 66:8-10,12.

DePerno, C. S., and J. A. Jenks. 2000. Commentary: what's up with the Black Hills deer? *Outdoor News* 33(22): 2,19.

DePerno, C. S., J. A. Jenks, and S. L. Griffin. 2003. Multidimensional cover characteristics: is seasonal variation in habitat selection related to white-tailed deer sexual segregation? *Journal of Mammalogy* 84:1316-1329.

DePerno, C. S., J. A. Jenks, S. L. Griffin, and R. W. Klaver. 2001. Use of the USDA Forest Service geographic information system for determining cover type use by white-tailed deer. *South Dakota Academy of Science* 80:201-212.

DePerno, C. S., J. A. Jenks, S. L. Griffin, and L. A. Rice. 1997. Are white-tailed deer numbers declining in the central Black Hills? *South Dakota Conservation Digest* 64(5):20-21.

DePerno, C. S., J. A. Jenks, S. L. Griffin, and L. A. Rice. 1997. Survival rates and characteristics of horizontal cover of white-tailed deer in the central Black Hills of South Dakota and Wyoming. *Proceedings Midwest Deer Turkey Group* 21:139.

DePerno, C. S., S. L. Griffin, J. A. Jenks, and L. A. Rice. 1998. An unusual migration of a 5-day-old fawn. *The Prairie Naturalist* 29:91-97.

DePerno, C. S., J. A. Jenks, S. L. Griffin, and L. A. Rice. 1999. Macro-habitats selected by white-tailed deer in the central Black Hills, South Dakota. *South Dakota Conservation Digest* 66:11.

DePerno, C. S., J. A. Jenks, S. L. Griffin, and L. A. Rice. 2000. Why are Black Hills White-tails declining? *South Dakota Conservation Digest* 67:12-15.

DePerno, C. S., J. A. Jenks, S. L. Griffin, and L. A. Rice. 2000. Survival rates for female white-tailed deer in the central Black Hills. *Wildlife Society Bulletin* 28:1030-1037.

DePerno, C. S., J. A. Jenks, S. L. Griffin, L. A. Rice, and K. F. Higgins. 2002. White-tailed deer habitats in the central Black Hills. *Journal of Range Management* 55:242-252.

Dubreuil, R. P. 2002. Habitat selection of white-tailed and mule deer in the southern Black Hills, South Dakota. M.S. Thesis, South Dakota State University, Brookings, South Dakota. 213pp.

Gibbs, M. C. 1993. Big game habitat utilization in noncommercially thinned ponderosa pine in Custer State Park. M.S. Thesis, South Dakota State University, Brookings, South Dakota. 75pp.

Gibbs, M. C., and J. A. Jenks. 1992. Evaluation of big game habitat improvement through precommercial thinning of ponderosa pine in Custer State Park, 1991. Progress Report No. 92-16, Federal Aide to Wildlife Restoration, Job W-75-R-33.

Gibbs, M. C., J. A. Jenks, C. S. DePerno, B. F. Sowell, and K. J. Jenkins. 2004. Cervid forage utilization in noncommercially thinned ponderosa pine forests. *Journal of Range Management* 57:435-441.

Gigliotti, L., P. Backman, J. A. Jenks, and D. Hubbard. 1999. 1998 Black Hills Hunter Survey. HD-1-99.SAM. South Dakota Department of Game, Fish and Parks, Pierre. 82pp.

Gigliotti, L., P. Backman, J. Jenks, and D. Hubbard. 2000. 1999 Black Hills Hunter Survey. HD-3-00.SAM. South Dakota Department of Game, Fish and Parks, Pierre. 159pp.

Griffin, S. L., C. S. DePerno, J. A. Jenks, and L. A. Rice. 1995. Capture success of white-tailed deer in the central Black Hills, South Dakota. *South Dakota Academy of Science* 74:71-76.

Griffin, S. L., C. S. DePerno, J. A. Jenks, and L. A. Rice. 1997. The migration of No. 1193 and her fawn. *South Dakota Conservation Digest* 64(3):22-23.

Griffin, S. L., J. A. Jenks, and C. S. DePerno. 2004. Seasonal movements and home ranges of white-tailed deer and mule deer in the southern Black Hills, South Dakota, 1998-2003. Completion Report No. 7583, Federal Aide to Wildlife Restoration, Job W-75-R-34. 59pp.

Griffin, S. L., J. F. Kennedy, L. A. Rice, and J. A. Jenks. 1992. Movements and habitat use of white-tailed deer in the northern Black Hills, South Dakota, 1991. Progress Report No. 92-12, Federal Aide to Wildlife Restoration, Job W-75-R-33. 21pp.

Griffin, S. L., J. F. Kennedy, L. A. Rice, and J. A. Jenks. 1994. Movements and habitat use of white-tailed deer in the northern Black Hills, South Dakota, 1990-1992. Completion Report, Federal Aide to Wildlife Restoration, Job W-75-R-33. 153pp.

Griffin, S. L., L. A. Rice, C. S. DePerno, and J. A. Jenks. 1997. Seasonal movements and home range of white-tailed deer in the central Black Hills, South Dakota, 1993-1997. *Proceedings Midwest Deer Turkey Group* 21:138.

Griffin, S. L., L. A. Rice, C. S. DePerno, and J. A. Jenks. 1999. Seasonal movements and home ranges of white-tailed deer in the central Black Hills, South Dakota and Wyoming, 1993-1997. Completion Report No. 99-03, Federal Aide to Wildlife Restoration, Job W-75-R-34. 59pp.

Hippensteel, B. A. 2000. Nutritional condition of white-tailed deer in the central Black Hills, South Dakota: influence of habitat and elk competition. M.S. Thesis, South Dakota State University, Brookings, South Dakota.194pp.

Jacques, C. R. 2001. Incidence of meningeal worm, Chronic Wasting Disease, and Bovine Tuberculosis in deer and elk populations in South Dakota. M.S. Thesis, South Dakota State University, Brookings, South Dakota.129pp.

Jacques, C. N., and J. A. Jenks. 2004. Prevalence of meningeal worm (*Parelaphostrongylus tenuis*) in deer and elk populations in South Dakota. *Journal of Wildlife Diseases* 40:133-136.

Jacques, C. N., J. A. Jenks, A. L. Jenny, and S. L. Griffin. 2003. Prevalence of Chronic Wasting Disease and Bovine Tuberculosis in free-ranging deer and elk in South Dakota. *Journal of Wildlife Diseases* 39:29-34.

Jenks, J. A., B. A. Hippensteel, R. G. Osborn, and C. S. DePerno. 1997. Nutritional condition of white-tailed deer in the Black Hills, South Dakota. *Proceedings Midwest Deer Turkey Group* 21:140.

Kennedy, J. F. 1992. Habitat selection by female white-tailed deer in the northern Black Hills of South Dakota and Wyoming. M.S. Thesis, South Dakota State University, Brookings, South Dakota. 65pp.

Kennedy, J. F., J. A. Jenks, R. L. Jones, and K. J. Jenkins. 1995. White-tailed deer use of mineral licks in the Black Hills of South Dakota. *American Midland Naturalist* 134:324-331.

Klaver, R. W. 2001. Effect of scale on habitat selection of female white-tailed deer in the central Black Hills, South Dakota and Wyoming. Ph.D. Dissertation, South Dakota State University, Brookings, South Dakota. 232pp.

Klaver, R. W., J. A. Jenks, C. S. DePerno, and S. L. Griffin. 2008. Associating seasonal range characteristics with survival of white-tailed deer. *Journal of Wildlife Management* 72:In Press.

Nelson, B. E. 1995. Use of a geographic information system for determining white-tailed deer habitat use in the northern Black Hills of South Dakota and Wyoming. M.S. Thesis, South Dakota State University, Brookings, South Dakota. 198pp.

Nelson, B. E., and J. A. Jenks. 1995. Use of a geographic information system for determining white-tailed deer habitat use in the northern Black Hills of South Dakota, USA. Pages 672-675 in J. A. Bissonette and P. R. Krausman, eds. Integrating people and wildlife for a sustainable future. *Proceedings of the First International Wildlife Management Congress.* The Wildlife Society, Bethesda, Md.

Osborn, R. G. 1994. White-tailed deer diets and nutritional condition in the northern Black Hills, South Dakota. M.S. Thesis, South Dakota State University, Brookings, South Dakota. 161pp.

Osborn, R. G., and J. A. Jenks. 1995. Relationship between dietary composition and quality of white-tailed deer in the Black Hills of South Dakota. *South Dakota Academy of Science* 74:77-90.

Osborn, R. G., and J. A. Jenks. 1998. Assessing diet quality of white-tailed deer populations using fecal indices: effects of supplemental feeding and area. *Journal of Mammalogy* 79:437-447.

Osborn, R. G., B. A. Hippensteel, J. A. Jenks, and T. A. Benzon. 2002. Estimating summer fawn mortality of white-tailed deer using corpora albicantia and lactation status. *South Dakota Academy of Science* 81:201-210.

Schmitz, L. E. 2000. Development of lure forages for minimizing winter depredation by deer in South Dakota. M.S. Thesis, South Dakota State University, Brookings, South Dakota. 76pp.

Schmitz, L. E. 2006. Ecology of white-tailed deer in South Dakota: growth, survival, and winter nutrition. Ph.D. Dissertation, South Dakota State University, Brookings, South Dakota. 169pp.

Schmitz, L. E., and J. A. Jenks. 2000. Antler development of captive South Dakota deer. *South Dakota Conservation Digest* 67:20-21.

Schmitz, L. E., and J. A. Jenks. 2001. Antler development of captive South Dakota deer. *South Dakota Academy of Science* 80:81-86.

Schuler, K. L. 2006. Monitoring for Chronic Wasting Disease in deer at Wind Cave National Park: investigating an emerging epidemic. Ph.D. Dissertation, South Dakota State University, Brookings, South Dakota. 149pp.

Schuler, K. L., J. A. Jenks, C. S. DePerno, M. A. Wild, and C. C. Swanson. 2005. Tonsillar biopsy test for chronic wasting disease: two sampling approaches in mule deer and white-tailed deer. *Journal of Wildlife Diseases* 41:820-824.

Uresk, D.W., T.A. Benzon, K. E. Severson, and L. Benkobi. 1999. Characteristics of white-tailed deer fawn beds, Black Hills, South Dakota. Great Basin Naturalist 59(4): 348-354.

Uresk, D.W., and T.A. Benzon. 2007. Monitoring with a modified Robel Pole on meadows in the central Black Hills of South Dakota. Western North American Naturalist 67(1):46-50.

Zimmerman, T. J. 2004. Effects of fire on the nutritional ecology of selected ungulates in the southern Black Hills, South Dakota. M.S. Thesis, South Dakota State University, Brookings, South Dakota. 289pp.

Zimmerman, T. J., J. A. Jenks, and D. M. Leslie, Jr. 2006. Gastrointestinal morphology of female white-tailed and mule deer: effects of fire, reproductive stage, and feeding type. *Journal of Mammalogy* 87:598-605.

Zimmerman, T. J., J. A. Jenks, D. M. Leslie, Jr., and R. D. Neiger. 2008. Hepatic elements in white-tailed and mule deer in the southern Black Hills, South Dakota. *Journal of Wildlife Diseases* 44:In Press.

Appenix II. Hunter Evaluation of the Black Hills Deer Season

For the past 12 years (1996 – 2007) the Wildlife Division (of the South Dakota Game, Fish, and Parks Department) has conducted an intensive survey of Black Hills deer hunters.[1] The main purpose of the survey is to measure the hunting season from the hunters' perspective. In addition, each year the survey includes some questions designed to learn something new about Black Hills deer hunters themselves.

The main hunter evaluation parameters measured include:

1. Number of days hunted
2. Success (and number of points on harvested bucks)
3. Number of deer seen (total)
4. Evaluation of the number of deer seen
5. Number of bucks seen
6. Evaluation of the number of bucks seen
7. Number of "quality" bucks seen
8. Evaluation of the "quality" of bucks seen
9. Evaluation of crowding conditions
10. Satisfaction with the deer hunt

Hunter satisfaction is the main overall evaluation parameter. Hunters' evaluations of the number of deer seen, number of bucks seen and the "quality" of bucks seen and success tend to be the best predictors of hunter satisfaction. These parameters have shown a significant increase following the management change in 1996. A significant portion of resident (Figure A) and nonresident (Figure B) hunters are currently satisfied with their Black Hills deer hunting experience. Hunters' evaluations of the deer season in terms of the number of deer seen, number of bucks seen and the "quality" of bucks seen have also increased significantly since first measured in 1997 (Figure C).

At the current numbers of hunters, crowding does not seem to be a significant issue for Black Hills deer hunters (Table 1). While number of points on harvested bucks was not strongly correlated with hunter satisfaction,[2] the number of points on harvested bucks has increased since 1996 (Table 2).

[1] Each year a report was produced that analyzed and summarized the results of the deer hunter survey.
[2] Hunters tend to only shoot a buck of the size that they would be satisfied with harvesting.

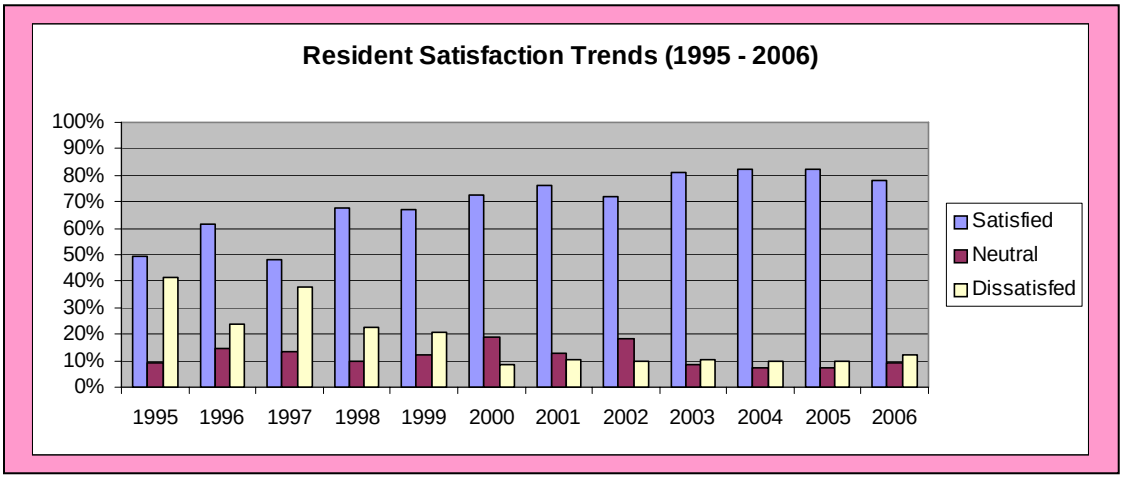


Figure A. Satisfaction trends for resident Black Hills deer hunters (1995 – 2006).

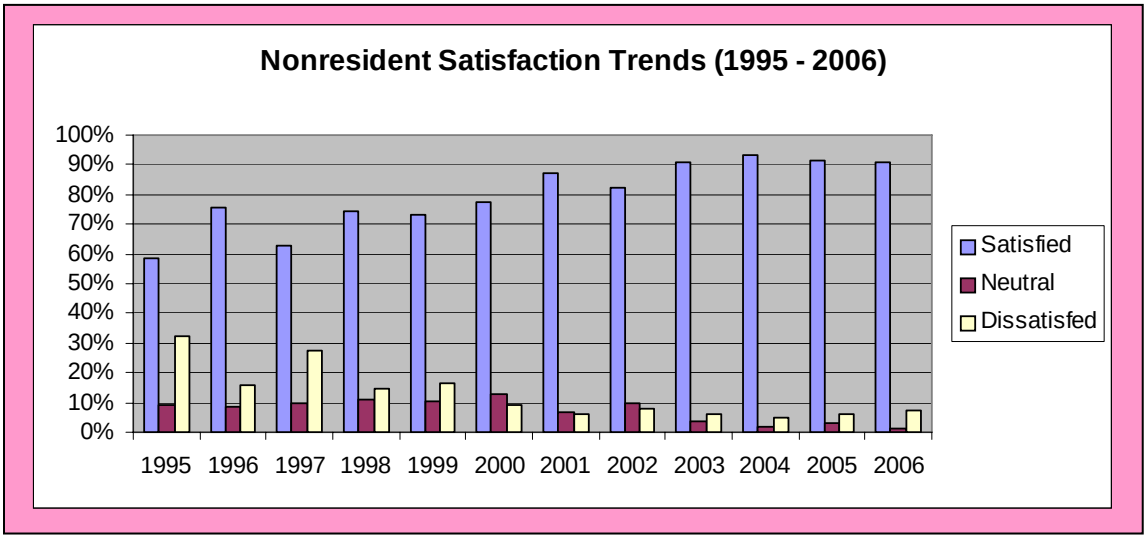


Figure B. Satisfaction trends for nonresident Black Hills deer hunters (1995 – 2006).

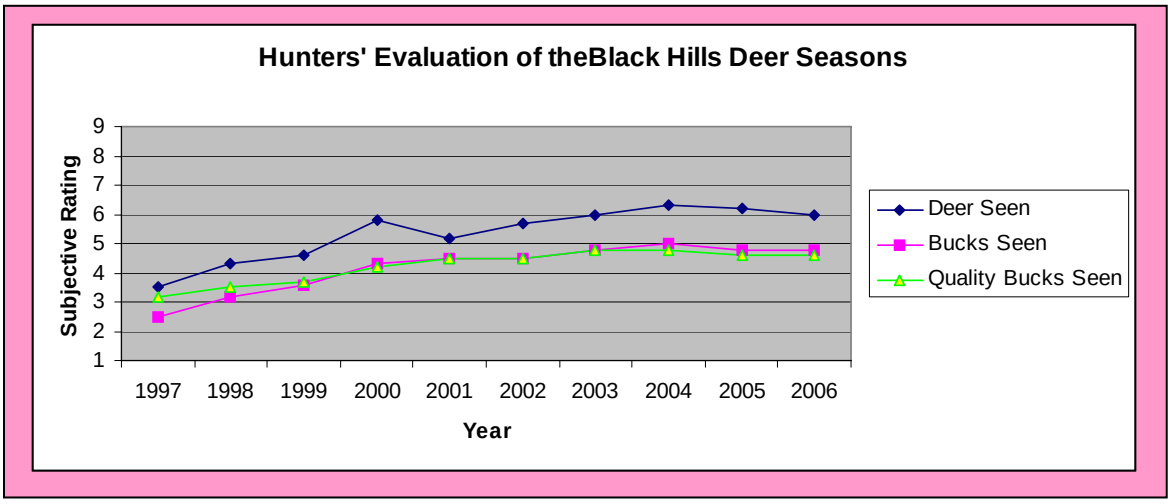


Figure C. Hunters' evaluation of the number of deer seen, number of bucks seen and the quality of bucks seen, rated on a scale of 1 *to* 9 (1997– 2006).

Table 1. Comparison of the hunters' evaluation of crowding during their Black Hills deer hunting in 1997 – 2006.

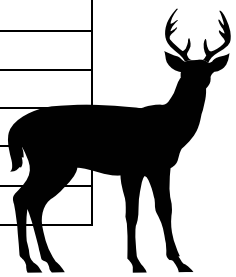
Evaluation of Crowding	1997	1998	1999	2000	2001
Not Enough Hunters	7.0%	7.3%	10.0%	6.2%	9.8%
Just Right – Not Crowded	51.2%	58.8%	66.3%	60.4%	64.8%
Slightly Crowded	23.4%	21.5%	15.4%	21.8%	17.7%
Moderately Crowded	11.4%	9.9%	6.5%	9.0%	6.0%
Very Crowded	7.0%	2.5%	1.9%	2.6%	1.7%
TOTAL	1,557	354	1,699	1,634	1,641
Total License Sales	12,362	8,262	7,830	7,921	6,707

Table 1-Continued.

Evaluation of Crowding	2002	2003	2004	2005	2006
Not Enough Hunters	9.2%	7.5%	6.7%	6.3%	6.3%
Just Right – Not Crowded	66.1%	64.9%	67.1%	66.0%	61.2%
Slightly Crowded	17.5%	18.8%	18.4%	19.6%	21.1%
Moderately Crowded	5.3%	7.0%	5.6%	6.2%	8.0%
Very Crowded	1.9%	1.8%	2.1%	1.9%	3.4%
TOTAL	1,643	1,710	1,841	1,679	1,519
Total License Sales	6,449	6,438	7,346	7,814	8,932

Table 2. Antler size (Eastern count) trends for the Black Hills deer season (96–06).

Year	Whitetail Buck		Mule Deer Buck	
	Ave. Total Points	**Sample Size**	**Ave. Total Points**	**Sample Size**
1996	6.7	362	4.7	75
1997	6.7	318	5.1	100
1998	7.0	744	5.3	251
1999	7.0	464	5.5	188
2000	7.5	626	5.8	137
2001	7.8	646	5.9	218
2002	7.9	665	6.0	192
2003	8.1	757	5.9	212
2004	8.1	736	5.8	246
2005	8.2	598	5.7	168
2006	8.1	547	5.9	130



Importance of Success (Harvesting a Deer) to Hunter Satisfaction: The best predictors of hunter satisfaction were hunters' evaluations of the deer herd as measured by hunters' evaluations of the number of deer seen, number of bucks seen and the "quality" of bucks seen. In other words, hunters can be satisfied if they feel that there was a good opportunity to see and harvest a deer or buck. In 2006, 62% of the unsuccessful hunters were still satisfied with their hunting experience, however, harvesting a doe increased satisfaction level by 15% and harvesting a buck increased satisfaction by 18%.

Continued Monitoring: The Division of Wildlife plans to continue to monitor some level of hunter evaluation parameters (especially hunter satisfaction and success) as part of the on-going evaluation of the Black Hills deer management program. Some types of changes that can impact hunter satisfaction are season design changes, changes in the Black Hills deer population and other impinging factors; for example, the addition of the mountain lion season occurring during the deer season (was new change in 2006).

Appendix III. Review and Public Comment Process

The South Dakota Black Hills Deer Management Plan was compiled and drafted by Division of Wildlife staff. Upon completing a draft document, it was reviewed by a faculty member at South Dakota State University Wildlife and Fisheries. The draft was then sent to all Division of Wildlife staff where a three week time frame was allotted to provide written or verbal comments/suggestions. Comments received were evaluated and included in the document. On June 11, 2008 the draft management plan was posted on the GF&P website and was made available for a 30-day comment period. A news release was sent through the normal media outlets to make the public aware of the comment period. Thirteen reviewers submitted comments. Six comments were equally divided between too many deer or too few deer. Another six reviewers commented that they wanted the antler point (2 points or better) restriction reinstated.

The reason that antler point restrictions (APR'S) are so popular with some hunter's, is because they believe buck age structure can improve without having to reduce the number of licenses for bucks. Numerous western states have tried APR'S and found this was not the case. In fact, in some instances age structure actually decreased under the APR practice. Methods that have proven to be successful in improving buck age structure include: limited license numbers, season length, limited weapon type, and season timing.

At the request of sportsmen, a citizen committee with the aid of the Game and Fish considered ways to improve buck age structure and numbers. The result was a change in the season structure. That change included limiting license numbers and going to a two-point restriction. Prior to 1996, the Black Hills buck season was during the month of November with over 14,000 licenses being sold over the counter, and approximately 5,000 bucks being harvested per year. Since 1996, license numbers have been reduced to 6,000 or less and buck harvest has been reduced to around 3,000. It is the reduction in buck harvest numbers that has improved the age structure, not the two point restriction.

In 2007 the two point restriction was removed, but license numbers still remained at 5,500. The improvement in buck age structure will still remain, and the lucky hunter who draws a Black Hills deer license will still have plenty of quality bucks to hunt.