PRAIRIE GROUSE MANAGEMENT

PLAN FOR SOUTH DAKOTA

2011-2015

Sharp-tailed Grouse

Greater Prairie Chicken

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EXECUTIVE SUMMARY

Sharp-tailed grouse (*Tympanuchus phasianellus*) and greater prairie chickens (*T. cupido*), collectively prairie grouse, are the most abundant grouse species in South Dakota (SD). The vast expanses of open grassland found throughout much of SD provide ideal habitat for these two game birds. Although slight differences in micro and macro habitat requirements exist between these two species, management strategies are similar enough to warrant one management plan for prairie grouse in SD.

As prairie obligates, prairie grouse are dependant upon grasslands for nearly all annual life cycle needs. Although weather can influence prairie grouse demographics from year to year, habitat quantity and quality have the primary influence over prairie grouse distribution and abundance. As a result, "Prairie Grouse Management Plan for South Dakota" focuses on issues related to the abundance and quality of grassland habitat. This management plan also provides overview information including the history of prairie grouse in SD; general ecology; monitoring and current status; hunter and harvest trends; habitat trends; research and issues, challenges and opportunities facing prairie grouse, private landowners and wildlife managers.

The South Dakota Department of Game, Fish and Parks' (SD GFP) goal for prairie grouse management in SD is to maintain prairie grouse populations and habitat consistent with the ecological, social, and aesthetic values of SD citizens while addressing the concerns and issues of residents and visitors of SD.

Objectives and strategies have been developed to guide implementation of this plan.

INTRODUCTION

South Dakota is home to two species of true prairie grouse, the sharp-tailed grouse and greater prairie chicken, hereafter prairie chicken. Prairie grouse are medium sized (16-18 inches long, 1.3-2.2 pounds) round bodied and short legged game birds native to grasslands, steppe, and mixed-shrub habitats of North America. Their cryptic coloration functions as camouflage and allows the birds to blend in nicely with grasslands, reducing detection from predators. The unique feathering of the legs and nostrils make them especially adapted to cold and snowy climates such as that found in SD. The feathering of the legs and feet is more pronounced in sharp-tailed grouse, whereas the feet of prairie-chickens appear nearly featherless. Although most prominent in sharp-tailed grouse, an additional adaptation to winter weather in both species are the lateral pectinate scales which perform like snow shoes.

The primary differentiating feature between the two species of prairie grouse is the shape of the tail. Sharp-tailed grouse, like the name suggests, have tail feathers which come to a sharp point while tail feathers of prairie-chickens are gently rounded. The distinct dark barring over much of the body of a prairie-chicken also differs from the generally non-barred dark colored dorsal and light colored ventral coloration of sharp-tailed grouse. The long pinnae, or ear feathers which are erected during male courtship displays are absent on sharp-tailed grouse. Both species of male prairie grouse have colored external air sacs located on each side of the neck which are

inflated during courtship. These air sacs are purple for sharp-tailed grouse and orange for prairie-chickens.

As their name suggests, prairie grouse are found primarily within landscapes dominated by grassland habitat. The unique behavior and habitat use of prairie grouse make them an exciting and important game bird. Most hunting occurs on open grasslands with the aid of dogs, usually pointers. The explosive flush of prairie grouse attracts thousands of hunters each year. In 2009, nearly 11,000 hunters harvested 38,000 prairie grouse. South Dakota is one of the few states where both species of prairie grouse can be harvested under liberal hunting regulations.

The unique lekking behavior of prairie grouse attracts numerous wildlife viewers each year. Permanent viewing blinds are available for public use at such places as the Fort Pierre National Grasslands (FPNG). Information regarding the blinds and reservations can be obtained by calling the FPNG Office at (605) 224-5517. The amazing sight and sound of prairie grouse courtship display is an annual sign that spring is soon to arrive on the prairies. The presence of these prairie gems is a indicator of a functioning prairie ecosystem which indicates landscape-level habitat exists for other prairie obligate species. Prairie grouse are “flagship” species for conservation of prairie habitat throughout their range and in SD.

This management plan identifies and provides detailed objective and strategies which will be used to meet the goal for prairie grouse management in SD. The future of prairie grouse in SD is primarily dependant upon prairie habitat, thus the bulk of this plan focuses on prairie habitat management. Because habitat important to prairie grouse intersects many ownership boundaries, this plan addresses issues related to both public and private land. Without a doubt, many prairie dependant species will benefit from the implementation of this plan.

PRAIRIE GROUSE ECOLOGY

As lekking species, leks are the focal point for reproductive ecology and behavior in prairie grouse. Leks, also known as “dancing grounds” for sharp-tailed grouse and “booming grounds” for prairie chickens, are located in areas of high breeding potential and typically exist within centers of large tracts of suitable prairie habitat (Merrill et al. 1999, Niemuth 2000, Hanowski et al. 2000, Runia 2009). Prairie grouse leks are typically located on knolls or on a gentle rise, although prairie chicken leks are sometimes located on flat bottomlands such as a dry wetland. Males gather on leks primarily during spring to defend territories and attract females during the breeding season. While it is not unusual for hens to visit several leks during a single season, males typically attend one lek each year and likely return to the same lek year after year.

In SD, male prairie grouse begin defending territories on leks as early as late February with peak activity coinciding with peak hen attendance in early April. Sharp-tailed grouse display behavior involves rapid foot stomping, rapid tail vibrations (tail rattling), inflation of purple air sacs, and aggressive face off behavior with other males. Prairie chickens raise their pinnae and tail feathers while producing loud booming noises by inflating their orange external air sacs. Aggressive behavior between males is common with some males even leaping several feet in the air during face offs. The booming noise made by male prairie chickens can be heard from several miles away during calm conditions.

Lekking activity can start well before daylight and last several hours. Leks are also attended during evening hours, although duration and display behavior is usually less intense. Male sharp-tailed grouse may also defend territories on leks during fall, although duration and intensity of display behavior is minimal. Lek attendance during fall is thought to be important in recruiting young males to the lek that did not establish a territory during the previous spring.

Hen prairie grouse may attend several leks before selecting a male for copulation. After breeding, hen prairie grouse will not visit a lek again unless her nest is destroyed. Most hen prairie grouse will initiate a nest within several miles of the lek they visited for breeding, although some may nest 10 miles or farther away. Nest initiation typically occurs within several days to a week after copulation.

Mean nest initiation date was found to be April 22 during a 3-year study on the FPNG (Norton 2005). Initial nests are usually located in residual grass or herbaceous vegetation, and sometimes under a small shrub such as western snowberry (*Symphoricarpos occidentalis*) as green up has yet to occur (Eng et al. 1988). First nest clutches typically contain 14 dull brown eggs (Norton 2005). Incubation begins before the last one or two eggs are laid and continues for 23 days. Nest success has been found to be higher when residual cover conceals the nest and the landscape consists of primarily intact grasslands (Ryan et al. 1998, Frederickson 1995, McCarthy et al. 1998). Mammalian predators are the primary cause of nest lost, although nest success of 80% has been documented on the ideal and intact habitat of the FPNG (Norton 2005). Hens may renest up to three times if previous nests are destroyed, but clutch size and egg size decreases with subsequent nesting attempts.

Although incubation begins before the last egg is laid, all eggs hatch concurrently after 23 days of incubation. Newly hatched chicks will remain in the nest bowl for about a day before the hen leads the brood to habitats containing plentiful insects, primarily areas with abundant forbs such as sweet clover and other wild flowers. By ten days of age, young grouse are capable of short flights and by 8-10 weeks they resemble adults in size. Chick survival was found to be about 36% during a 3-year study on the FPNG (Norton 2005). Young of the year grouse will remain in loose family groups well into the fall.

During spring and summer, adult prairie grouse spend a majority of their time in grasslands including grass and alfalfa hay fields. Their diet consists of plant material such as seeds, berries, and buds. During fall, prairie grouse form flocks which may contain both species and remain together through winter. Prairie grouse also utilize waste grain from agricultural fields, although this food source is utilized more during fall and winter. Waste grains from agricultural crops are used by sharp-tailed grouse, but are not necessary for winter survival; however, waste grains likely contribute to prairie-chicken survival and persistence in some landscapes. In SD, prairie chickens likely rely on waste grains during winter and remain within a mile or two of this food source during the entire winter. The interaction between agriculture and prairie chicken distribution and abundance is described in detail in the historical information section.

Prairie grouse are very well adapted to survive severe winter weather in open grassland habitat such as that found in SD. During winter, prairie grouse use woody cover for shelter or simply

roost in the snow. This unique behavior of snow roosting protects prairie grouse from harsh winds and blowing snow in open habitats. Sharp-tailed grouse will also roost in trees during winter.

As winter transitions to spring, large flocks of prairie grouse disperse across the landscape. Males begin attending leks as early as late February in preparation for the upcoming breeding season. Males will spend most of March through late spring in close proximity to the lek that they attend. As the breeding season winds down in June, male prairie grouse lazily loaf through the summer until the next breeding season. Hens receive no help from males for nesting or brood-rearing activities.

HISTORICAL INFORMATION AND CURRENT DISTRIBUTION

Prior to European settlement, SD's landscape was a rolling sea of mixed and tallgrass prairie which likely supported sharp-tailed grouse nearly statewide. The heavily wooded areas of the Black Hills do not provide suitable habitat, although sharp-tailed grouse do inhabit herbaceous openings within some portions of the forest.

Sharp-tailed grouse are considered landscape species which means they require substantial grassland habitat at a landscape level to persist (Hanowski 2000, Runia 2009). Mass conversion of grassland to cropland has reduced the distribution of sharp-tailed grouse particularly in southeastern SD. The current distribution of sharp-tailed grouse includes nearly all of western SD and about half of the eastern portion of the state (Figure 1). Although sharp-tailed grouse still occur in every county west of the Missouri River, conversion of prairie to cropland has undoubtedly reduced their abundance west river and statewide.

Prairie chickens may have been native to portions of eastern and central SD in limited numbers prior to European settlement (summarized in Flake et al. 2010). While conversion of prairie to cropland strictly reduced the distribution and abundance of sharp-tailed grouse, prairie chickens actually expanded in distribution and increased in abundance when portions of the landscape were converted to cropland. Prairie chickens benefit greatly when waste grain from agricultural fields are available in northern states such as SD. As European settlement and associated agriculture marched north and west across the prairies, prairie chicken populations exploded and "followed the plow" all the way to prairie Canada (Houston 2002, Johnsgard and Wood 1968). During the early 1900s prairie chickens could be found nearly statewide in SD. It is likely that they benefited from the extirpation of buffalo which resulted in the associated increase in vegetation height across the state. The distribution and abundance of prairie chickens most probably peaked at the turn of the 20th century. It became quite apparent that a landscape dominated by grasslands with interspersed cropland provided ideal habitat for prairie chickens.

Unfortunately, the range of prairie chickens quickly contracted as agriculture became too intense and cattle grazing reduced grass height over much of their newly acquired range. As prairie chickens are also landscape species, their current distribution occurs where large tracts of native prairie remain, mostly in central SD (Figure 2). Prairie chickens are thought to be limited within SD by lack of grassland habitat in the east and grass height in the west.

SURVEYS & MONITORING

The most widely used method to survey prairie grouse throughout their range is the spring lek survey. In SD, two lek survey methods are currently used to monitor prairie grouse populations; "traditional" method and "listening station" method. Observers conducting traditional surveys search established 40 mi^2 survey areas for prairie grouse leks and count all males attending each lek. The number of males/mi^2 is tracked from year to year and is considered an index to the spring population. Currently, ten traditional surveys (Figure 3) are conducted annually throughout the state. These surveys have been conducted since the 1940s, although consistent protocol and routes were not established until the early 1950s. From that time forward, direct comparisons can be made (Figure 5).

Thirty-two listening station survey routes were established in 2006 in an attempt to collect data over a larger geographic area. Each 20-30 mile route (Figure 4) has 6-11 listening stations, located approximately every three miles along the route. Observers listen and visually search for prairie grouse lek activity for three minutes at each designated station and record how many leks of each species are detected. Leks observed from the road are mapped and numbers of birds are counted if possible.

Wings from hunter harvested prairie grouse are also collected during the first two weeks of the season at wing collection boxes throughout the state (http://www.gfp.sd.gov/hunting/small-game/prairie-grouse-wing-boxes.aspx). Hunters are encouraged to place one wing from each harvested grouse in one of thirty collection boxes. Each wing is identified to species and aged to determine species harvest distribution and age ratios. The ratio of young of year grouse to adult grouse can be used to gauge production during that specific year. Biologists use this data to relate grouse production to weather variables with the hopes of predicting grouse production in future years based on these weather variables.

HUNTER & HARVEST TRENDS

Prairie grouse hunters and harvest have been estimated annually by analyzing response from hunter survey cards since 1945. Hunter and harvest numbers have been steadily declining since 1975 (Figure 6). In 2009, an estimated 6,377 resident and 4,571 non-resident prairie grouse hunters harvested approximately 38,680 prairie grouse. Although harvest is a summation of both species of prairie grouse, prior to 2006, 60% of the bag was thought to be sharp-tailed grouse. Much of the prairie grouse harvest occurs in the central and western portion of the state (Figure 7). In 2006, hunters were asked specifically how many of each species of prairie grouse they harvested. Results from this survey revealed the 2006 harvest was approximately 76% sharp-tailed grouse, 20% prairie chicken, and 4% unknown.

HABITAT TRENDS

As landscape species, prairie grouse require landscapes which contain a high percentage of grassland to persist (Merrill et al. 1999, Niemuth 2000, Hanowski et al. 2000, Runia 2009). Since European settlement, grasslands have become one of the most imperiled ecosystems in the

Great Plains primarily due to conversion to cropland (Summarized in Samson et al. 2004). Range wide, severe loss of native grasslands has resulted in a decrease in abundance and distribution of prairie grouse (Johnsgard and Wood 1968) and these declines continue (Silvy and Hagen 2004). Sharp-tailed grouse were once found in 21 states, but habitat loss has reduced their range to portions of 11 states. Prairie grouse are prime examples of how large scale land use changes can influence the distribution and abundance of landscape prairie obligates.

South Dakota's landscape has changed substantially since European settlement in the late 1800s. Early settlers found the rich soils of eastern SD to be very productive for agricultural crops and quickly converted much of the grassland landscape to cropland. Conversion of grassland to cropland was more intense in the far eastern portion of the state because of higher annual precipitation. More recently, high commodity prices fueled by the ethanol industry and improvements in agricultural technology (e.g. improved crop genetics) have resulted in increased conversions of grassland to cropland in SD (U.S. GAO 2007). Total cropland in SD increased by nearly 2,500,000 acres in the last 40 years as more land, primarily grasslands, has been converted to cropland (Figure 8).

For example, during the 15-year period of 1982-1997, 1.82 million acres of grassland were converted to cropland (U.S. GAO 2007). Recent estimates indicate that conversion of grassland to cropland continues at a rate of approximately 50,000 acres per year (Stubbs 2007). Using these statistics, it is reasonable to say that SD has lost an estimated 2.5 million acres of grassland to cropland conversion since the early 1980s. Much of the recent conversions are occurring within the Missouri Coteau (Stubbs 2007, Stephens et al. 2010) which also represents the eastern fringe of the prairie grouse range in SD. This region contains vast grasslands that are very vulnerable to future conversion (Stephens et al. 2008).

While grasslands are being converted to cropland at alarming rates, there is interest by landowners to keep land in grassland in perpetuity. In fact, as of March 2010, 805 landowners representing 364,000 acres were on the waiting list to enroll their land in a perpetual grassland easement through the U.S. Fish and Wildlife Service (Boyd Schulz, personal communication). Recent funding allows for approximately 25,000 acres of enrollment annually and 880,000 acres are currently protected by grassland easements in SD.

Although conversion of grassland to cropland has been substantial, the Conservation Reserve Program (CRP) which was authorized under the 1985 Farm Bill has returned some cropland to grassland (Figure 9). Through this program, landowners receive an annual rental payment to convert eligible cropland to grassland for 10-15 year contracts. As of October 29, 2010, SD had 1,060,222 acres of active CRP contracts. As much as 1,690,000 acres of CRP has been enrolled at one time in SD. Although CRP can benefit prairie grouse (Rodgers and Hoffman 2005, Nielson et al. 2006, Runia 2009), it represents a short-term solution to a long term habitat loss problem.

In addition to declines in grassland habitat quantity, invasive plant species have also reduced grassland habitat quality across SD. Non-native grasses such smooth brome (*Bromus inermis*) and Kentucky bluegrass (*Poa pratensis*) compete with native grasses and provide lower quality habitat than native plant communities. Other invasive weeds such as Canada thistle (*Cirsium*

arvense) and leafy spurge (*Euphorbia esula*) are difficult to control and can become dominate if not managed.

Energy development, in particular, wind energy, is another potential threat to prairie grouse habitat. During the past decade, wind energy companies have identified SD as one of the top geographic locations for development within the United States. According to the U.S. Department of Energy, South Dakota's resource potential for wind energy includes vast areas with wind power classifications of good to superb (Figure 10). Much of the remaining grasslands occur in areas of high wind potential such as the Missouri Coteau and vast areas of western SD. Although the influence of wind energy is unknown, prairie chickens have been found to avoid power lines and declines by the closely related sage grouse have been linked to oil and gas development and other anthropogenic features (Pruett et al. 2009, Taylor et al. 2010, Johnson 2011 et al.). As of 2010, South Dakota has 11 operational wind energy projects capable of generating 314 MW of power and more than 30 projects are pending, proposed, or under construction (Figure 11).

PRAIRIE GROUSE RESEARCH

Rice and Carter (1982) investigated the relationship between grassland management practices and their subsequent influence on prairie grouse populations on the FPNG from 1974-1978. Specifically, they evaluated grazing regimes and resulting residual grass available to nesting grouse was evaluated. Comparisons were made among rest-rotation, deferred-rotation, winter pasture, bull pasture, and wildlife areas. Prairie grouse production was compared among systems and related to available grass cover (lbs/acre).

The rest-rotation ungrazed pastures, winter pastures, and bull pastures yielded the most nests-broods/acre and also possessed the highest amount of residual cover for nesting. Even when grazed rest-rotation pastures were included in analyses, rest-rotation pastures had more nest-broods/acre than deferred rotation pastures. The wildlife area study plots had among the highest amounts of residual grass, but much of the grass was produced on lowland sites which prairie grouse avoided for nesting.

The key finding of this study was that grazing systems which produced at least 900 lbs/acre of forage provided adequate residual cover for prairie grouse nesting and brood rearing. The authors recommended rest-rotation and winter grazing systems be used on the FPNG as a way to boost local prairie grouse populations.

Fredrickson (1995) evaluated the success of a prairie chicken reintroduction effort during 1985-1989. Prairie chickens were captured on the FPNG and Lower Brule Indian Reservation (LBIR) and released in south-central McPherson County during 1986-1988. Birds were fitted with radio collars and tracked to determine survival, home range, and habitat use.

The reintroduction effort was deemed unsuccessful as no prairie chickens were observed in the release area for 5 years (1989-1993) following the last year of releases. Cause for the lack of success in the release area was attributed to habitat deficiencies, particularly during winter. Most of the released prairie chickens traveled up to 20 miles during winter to find adequate croplands

for winter food that were adjacent to high quality grassland for roosting. Within the release area, adequate grass cover was lacking near available crop fields. Most of the migrating prairie chickens were killed by predators before they could return to the release area after each winter.

Norton (2005) estimated prairie chicken and sharp-tailed grouse brood habitat use, nest success, and hen and brood survival on the FPNG during 2003-2005. Overall combined nest success was approximately 75%, which is one of the highest estimates ever recorded. Breeding season hen survival was approximately 82% during the three year study. Brood survival was also an astonishing 85% and chick survival was estimated at 36%. Prairie grouse broods avoided the use of smooth brome (*Bromus inermis*) and selected for forb cover such as sweet clover (*Melilotus spp.*). This study demonstrated how prairie grouse can exhibit very high reproductive potential in landscapes dominated by well managed grasslands.

Runia (2009) investigated how large scale land use affects the distribution and abundance of prairie grouse in northeastern SD with an emphasis on the influence of CRP. Land use surrounding prairie grouse leks was compared to land use surrounding non-lek locations at several spatial scales. Landscapes surrounding prairie grouse leks contained higher proportions of pasture and CRP at several spatial scales. Spatially explicit habitat suitability models were also developed in a geographic information system (GIS) to predict which landscapes are most likely to support prairie grouse leks. Strongest models occurred at the 1600 m scale which is similar to other similar studies (Merrill et al. 1999, Niemuth 2000). A similar study is currently under way to document landscape level habitat characteristics associated with prairie chicken leks on the extreme eastern fringe of their range.

Another prairie grouse research project is currently underway to collect base line data on a pre-construction wind energy site. A control site (wind energy development not anticipated) with similar landscape characteristics will be used as a comparison. This study was launched during the spring of 2010 and will be used to determine any effects wind energy development may have on prairie grouse behavior.

ISSUES, CHALLENGES, & OPPORTUNITIES

Loss of grassland habitat, primarily through conversion to cropland, will be the primary threat to prairie grouse in SD during the years to come. History has demonstrated how prairie grouse population declines are linked to landscape level land use changes. Because SD's landscape changes are driven by many factors, it will be challenging to slow these habitat trends. With challenges also come opportunities, and many opportunities exist to maintain, manage, and restore prairie grouse habitat in SD.

Conservation easements are one of the best tools available to managers to protect existing grasslands which are critical for prairie grouse. It will be crucial to continue to work with partners such as the U.S. Fish and Wildlife Service, Ducks Unlimited, Pheasants Forever and others to perpetually protect critical habitat through easements. Likewise, it will be important to work with the U.S. Department of Agriculture to maximize use of Farm Bill programs such as CRP, Environmental Quality Incentives Program (EQIP), Grassland Reserve Program (GRP),

Wetlands Reserve Program (WRP) and Wildlife Habitat Incentives Program (WHIP), all of which can be used to maintain, manage, and restore prairie habitat.

Through the Department's private lands habitat program, the SD GFP will continue to provide technical and financial assistance to those seeking guidance for habitat projects. It will be important to continue to support habitat projects on private lands that restore, maintain, or properly manage grasslands. Through outreach, the SD GFP will promote our wildlife partners and wetland and grassland habitat programs to the highest degree possible.

There are also opportunities to further inform the public about prairie grouse behavior, habitat needs and trends, and hunting/viewing opportunities. The SD GFP has many media available to further inform the public about prairie grouse and encourage them to participate in hunting or viewing opportunities. The Department's recently published "Grouse of Plains and Mountains" book is an excellent resource for information related to all grouse species in SD and is available at https://apps.sd.gov/applications/GF33/Catalog.asp?dsp=6. With increased public awareness of the challenges facing prairie grouse, more interest in the preservation of these great birds and their habitats may occur.

FUTURE DIRECTION & ACTIONS

Guiding Philosophies of the SD 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 statements reflect the collective values of the people who are in the Division of Wildlife in relation to prairie grouse management in South Dakota.

WE BELIEVE…

- Wildlife, including prairie grouse, contributes significantly to the quality of life in South Dakota and therefore must be sustained for future generations.
- In providing for and sustaining the diversity of our wildlife heritage for present and future generations.
- Recreational hunting is a legitimate use of prairie grouse and must be encouraged and preserved.
- Prairie grouse are indicator species of healthy prairie ecosystems and serve as flagship species for conservation of prairie habitats and prairie obligate species.
- The stewardship provided by private landowners, particularly ranchers, is critical to prairie grouse persistence and deserves recognition, respect, and support.
- The future of prairie grouse in South Dakota depends on a public that appreciates, understands, and actively supports prairie habitat conservation.

PRAIRIE GROUSE MANAGEMENT GOAL

To maintain prairie grouse populations and habitat consistent with the ecological, social, and aesthetic values of South Dakota citizens while addressing the concerns and issues of residents and visitors of South Dakota.

OBJECTIVE 1: Maintain statewide grassland habitat acreages at the highest level possible.

STRATEGIES

1.1 Advocate for current and future USDA Farm Bill programs and policies in the Commodities, Conservation, Energy, and Crop Insurance titles that incentivize native grassland preservation, protection, and enhancement.

1.2 Advocate for land use policies and procedures, including local zoning and property tax assessment, which preserve and protect native grassland functions and values in a fair and equitable manner.

1.3 Maintain support for CRP in federal farm legislation through continued cooperation with SD Department of Agriculture, USDA, other state and federal agencies, non-governmental conservation organizations, coalition groups (e.g. Northern Great Plains Working Group, Association of Fish & Wildlife Agencies), landowners and agricultural groups.

1.4 Continue to advocate the use and proper timing of CRP general sign-ups.

1.5 Continue to advocate for strategic use of existing and new continuous CRP practices that provide quality prairie grouse habitat (ex., West River SAFE).

1.6 Annually seek and provide assistance to landowners with expiring CRP contracts, by providing re-enrollment options into general and continuous CRP, or other programs that are available for maintaining all or a portion of this grassland habitat.

1.7 Maintain existing partnerships with Pheasants Forever, NRCS and SD GFP to fund a minimum of seven Farm Bill Biologists in NRCS Offices to assist private landowners with technical assistance and in the promotion of all habitat programs.

1.7a Expand the existing partnership to fund additional Farm Bill Biologists in the future as funding allows

1.8 Continue to seek opportunities with conservation partners to create new partnerships in western South Dakota to deliver technical assistance for Farm Bill programs.

1.9 By the end of 2012, enroll 100,000 acres of marginal cropland or expiring CRP into the James River Watershed CREP.

1.10 Continue to support USFWS acquisition of Waterfowl Production Areas and grassland easements.

1.10a When possible, provide non-federal matching funds for North American Wetland Conservation Act grants.

1.11 Continue to support the efforts of the South Dakota Parks and Wildlife Foundation, Northern Prairie Lands Trust and other conservation organizations in the preservation and protection of wildlife habitat.

OBJECTIVE 2: Advocate improved management of grasslands to enhance quantity and quality of nesting and brood-rearing habitat on private and public lands.

STRATEGIES

2.1 Continue to support the increased use of planned range management through USDA's EQIP program, as well as other partnership efforts involving the USFWS Partners for Fish & Wildlife Program, South Dakota Grassland Coalition and local conservation districts to improve range and nesting conditions on native range and tame pastures.

2.2 SD GFP private lands biologists will remain involved with appropriate State Technical sub-committees that recommend/develop range management initiatives through USDA programs (e.g. CRP, WHIP, WRP, EQIP, CSP, GRP).

2.2a Recommend that a significant portion GRP funding is allocated to perpetual easements.

2.3 When applicable, SD GFP private lands biologists will provide input for mid-term management, managed haying and grazing, and emergency haying and grazing guidelines on appropriate CRP contracts.

2.4 SD GFP will continue to contribute funds to range management projects available through conservation districts that often involve USFWS private lands staff.

2.5 SD GFP private lands biologists will continue to increase landowner participation by implementing grazing stewardship practices through department cost-share programs, including managed grazing systems designed to measurably benefit wildlife and long-term sustainable use of native rangelands and tame pastures for livestock production.

2.6 Continue to collaborate with conservation partners and seek opportunities to provide technical and financial assistance to incorporate prescribed fire as a management tool for grassland plant communities.

2.7 Annually maintain and improve nesting and brood rearing habitats for prairie grouse on GPAs using proper management techniques such as fire, grazing, and haying.

2.8 Continue to use native plant species whenever possible for habitat developments and continue to protect existing native prairie on GPAs.

2.9 Continue to remove invasive, encroaching, and low quality woody cover in and adjacent to nesting and brood rearing habitats on GPAs.

2.10 Continue to collaborate with wind energy developers to site wind turbines in areas that will minimize impacts on prairie grouse.

2.10a Continue to use current research to develop wind energy siting recommendations and use these recommendations to guide construction of wind energy structures that will minimize affects on prairie grouse

2.10b Use information gained from internal research on the effects of wind energy on prairie grouse and use that information to update wind energy siting recommendations as necessary.

OBJECTIVE 3: Monitor prairie grouse abundance, harvest, and hunter numbers and satisfaction.

STRATEGIES

3.1 Annually conduct traditional and listening lek surveys.

3.2 Annually summarize lek survey data to determine changes in population status.

3.3 Annually send and summarize results of hunter harvest surveys to project prairie grouse harvest, number of prairie grouse hunters, and hunter satisfaction.

3.4 Continue to explore the possibility of using GPS enabled data collectors with Cybertracker software for prairie grouse lek surveys.

3.5 Periodically review prairie grouse lek survey protocol and discuss changes that could improve data collection efficiency and accuracy.

3.6 Continue to collect wings from hunter harvested prairie grouse throughout the state to evaluate age ratio and species composition of harvested grouse

OBJECTIVE 4: Evaluate research needs and prioritize on an annual basis.

STRATEGIES

4.1 Annually collaborate with stakeholders and summarize research needs and ideas.

4.2. Continue to collaborate with the Forest Service biologists to relate weather variables to prairie grouse production on the Fort Pierre National Grasslands using age ratios from hunter harvested prairie grouse.

4.3 Investigate the possibility of developing a statewide spatially explicit habitat suitability model for prairie grouse.

4.4 The SD GFP will send at least one staff member to the semi-annual meeting of the Prairie Grouse Technical Committee meeting. This meeting facilitates the exchange of information between states on survey techniques, harvest regulations, research and habitat management.

4.5 The SD GFP will consider sending a representative to scientific meetings that will exchange information related to prairie grouse management.

OBJECTIVE 5. Provide the public with access to quality prairie grouse habitat on private and public land

STRATEGIES

5.1 Continue to enroll large blocks of well managed grasslands into the walk-in area program, especially in central and western South Dakota where high density prairie grouse populations exist.

5.2 Continue to assist SD School and Public Lands with posting boundaries and access trails for public hunting opportunities.

5.3 Continue to provide up to date public land layers available for free download to be used in conjunction with compatible GPS units.

OBJECTIVE 6. Promote public, landowner, and conservation agency awareness of prairie grouse and habitat management issues of highest conservation concern.

STRATEGIES

6.1 By May 2011, provide paper and electronic copies of "Prairie Grouse Management Plan for South Dakota 2011-2015" to all conservation partners, the public, private landowners, and all communities and businesses that benefit from prairie grouse, prairie grouse hunting, and related activities.

6.2 Periodically include articles about prairie grouse and prairie grouse habitat in the SD Conservation Digest.

6.3 Include habitat management topics related to prairie grouse management in the "Habitat Notes" section of the SD Conservation Digest.

6.4 By 2012, add a web page about prairie grouse under the outdoor learning section of the department website which includes descriptions, videos and pictures of prairie grouse display behavior.

Figure 1. Distribution and general abundance of sharp-tailed grouse in South Dakota (Flake et al. 2010).

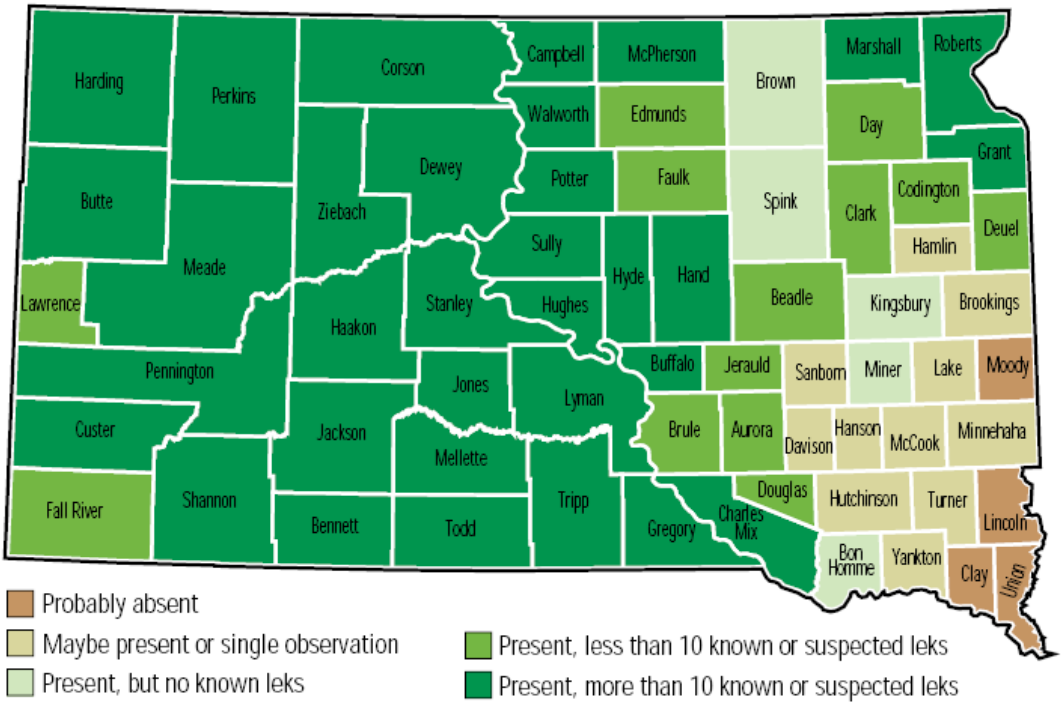


Figure 2. Distribution and general abundance of greater prairie chickens in South Dakota (Flake et al. 2010).

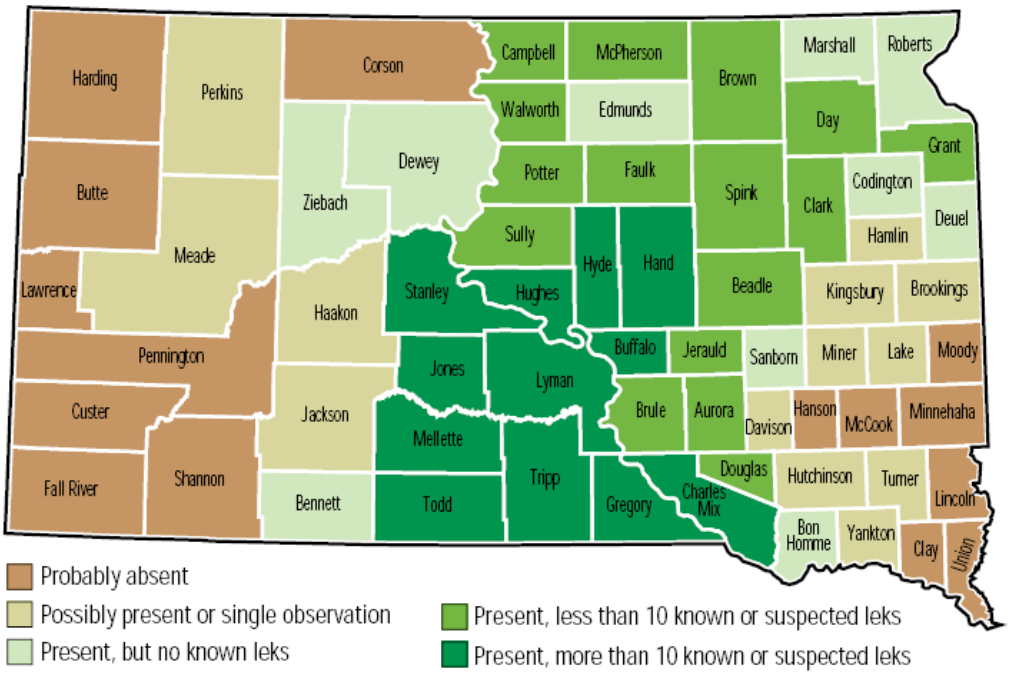


Figure 3. Survey areas that are surveyed for prairie grouse using the traditional method.

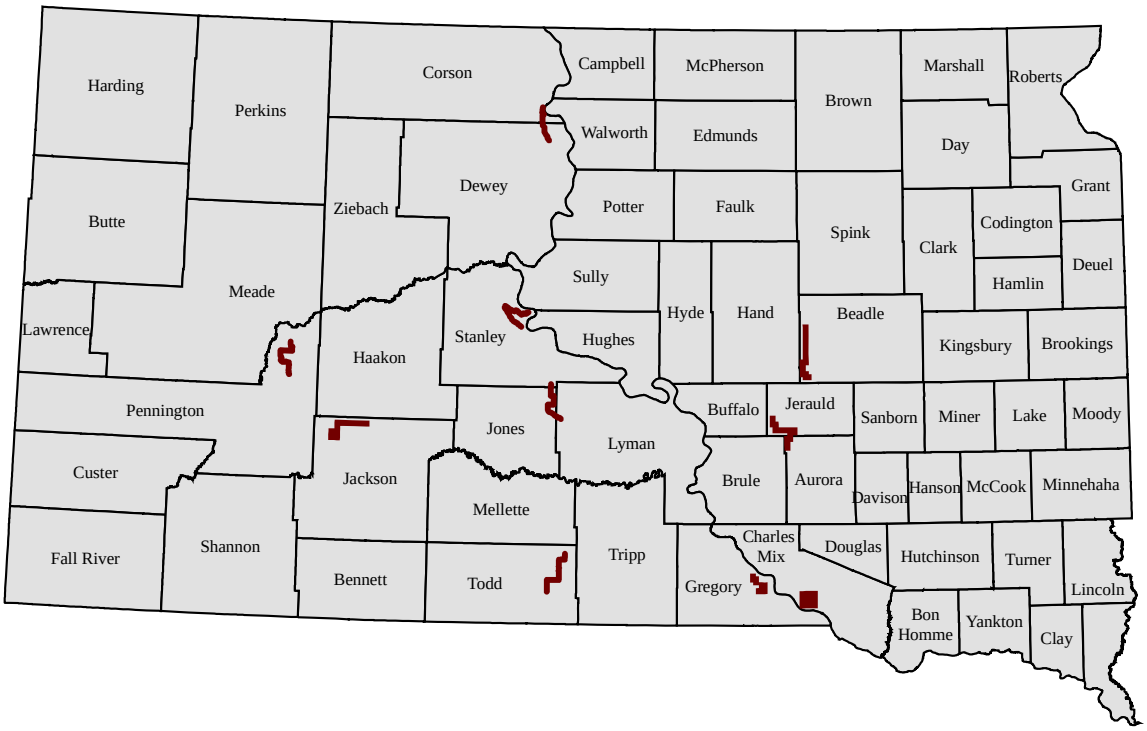


Figure 4. Survey routes that are surveyed for prairie grouse using the listening station method.

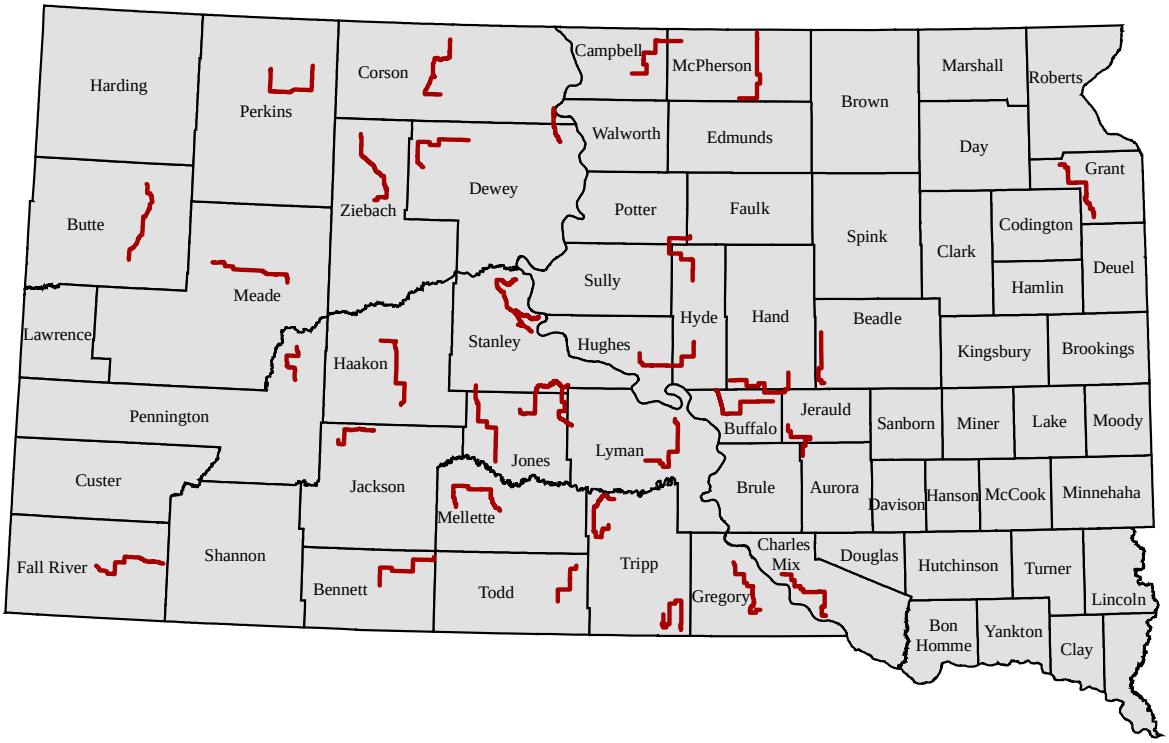


Figure 5. Densities of male prairie grouse detected during traditional lek surveys 1952-2010.

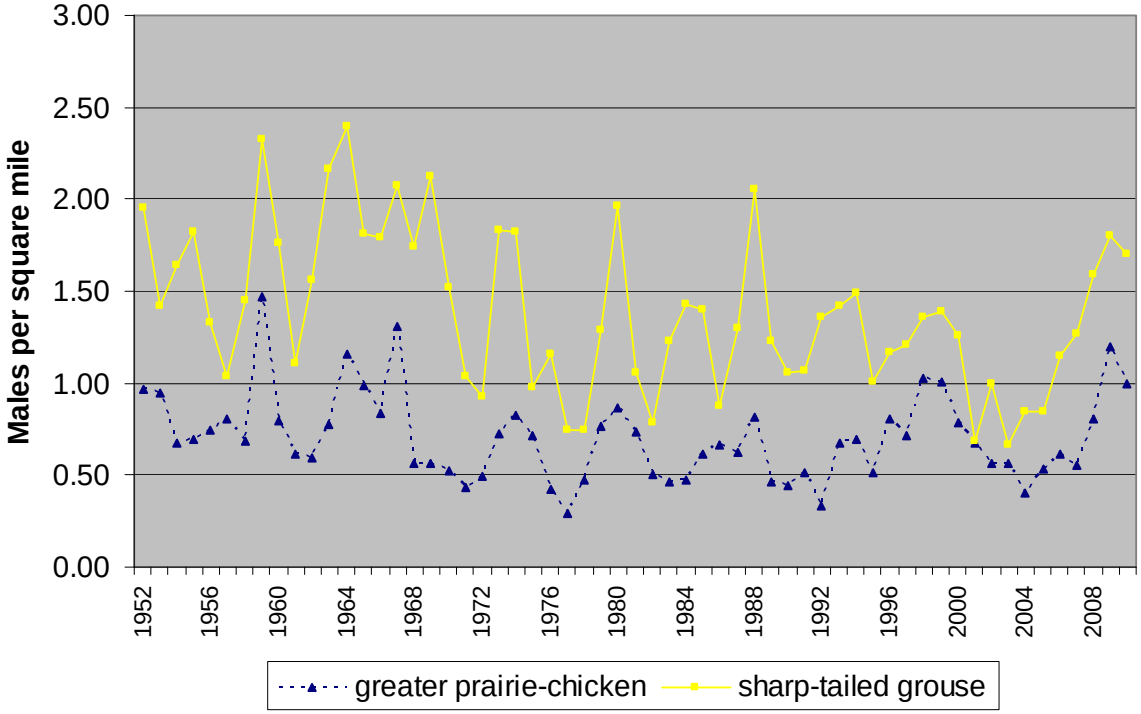


Figure 6. Prairie grouse hunter and harvest trends in South Dakota 1945-2009

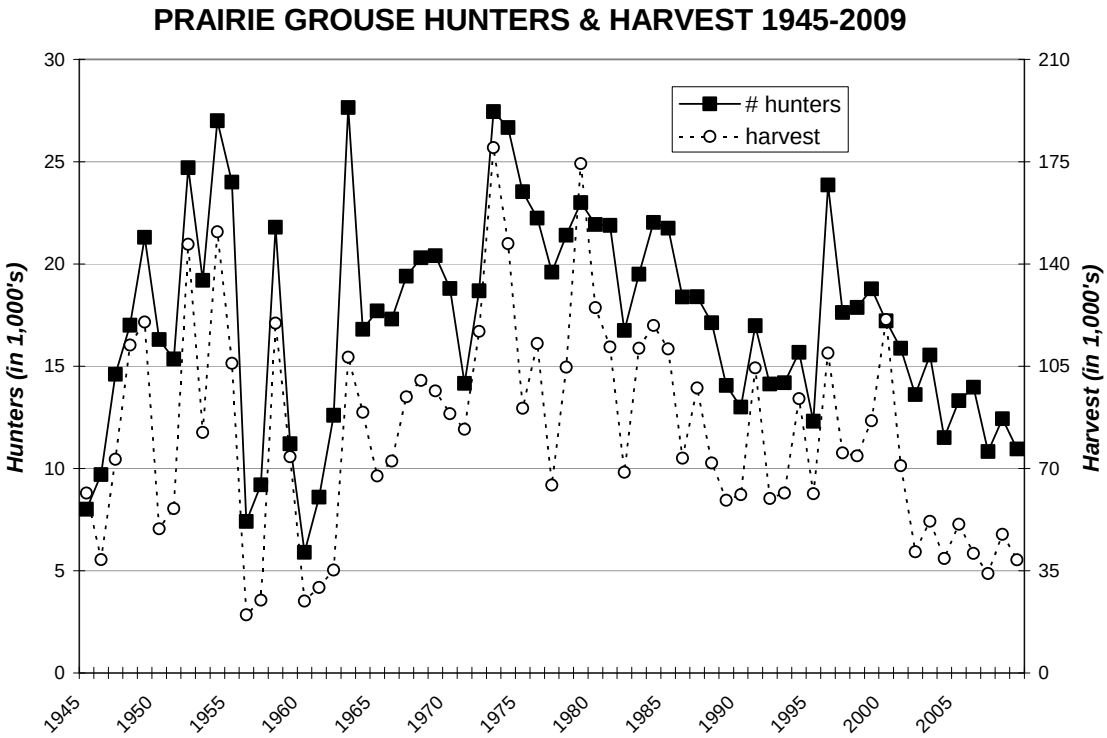


Figure 7. Average prairie grouse harvest/100 miles^2 during past 10 years, 2000-2009.

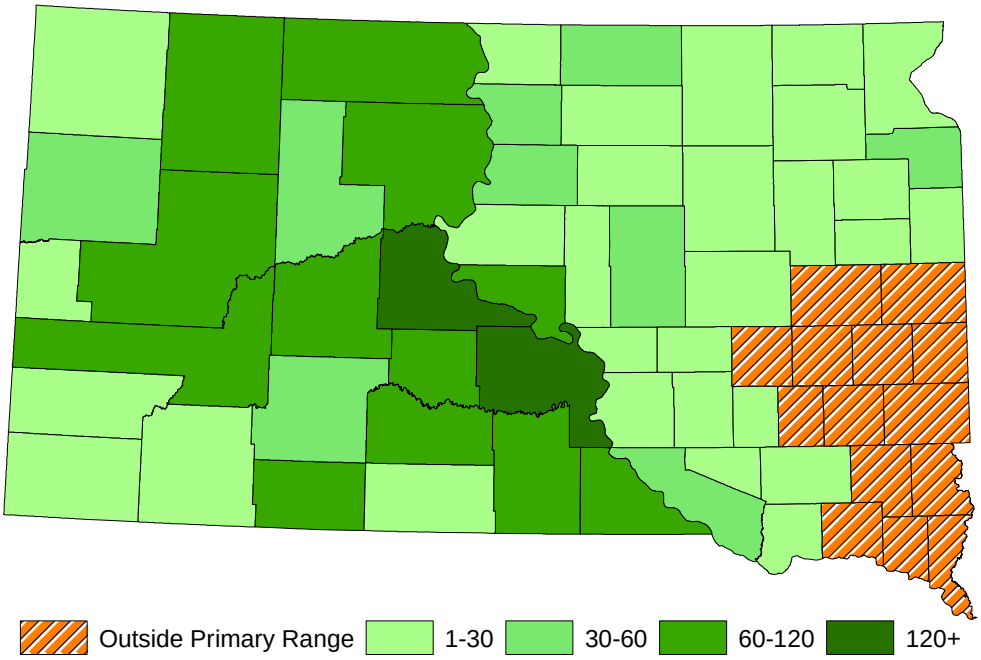


Figure 8. Total cropland in South Dakota.

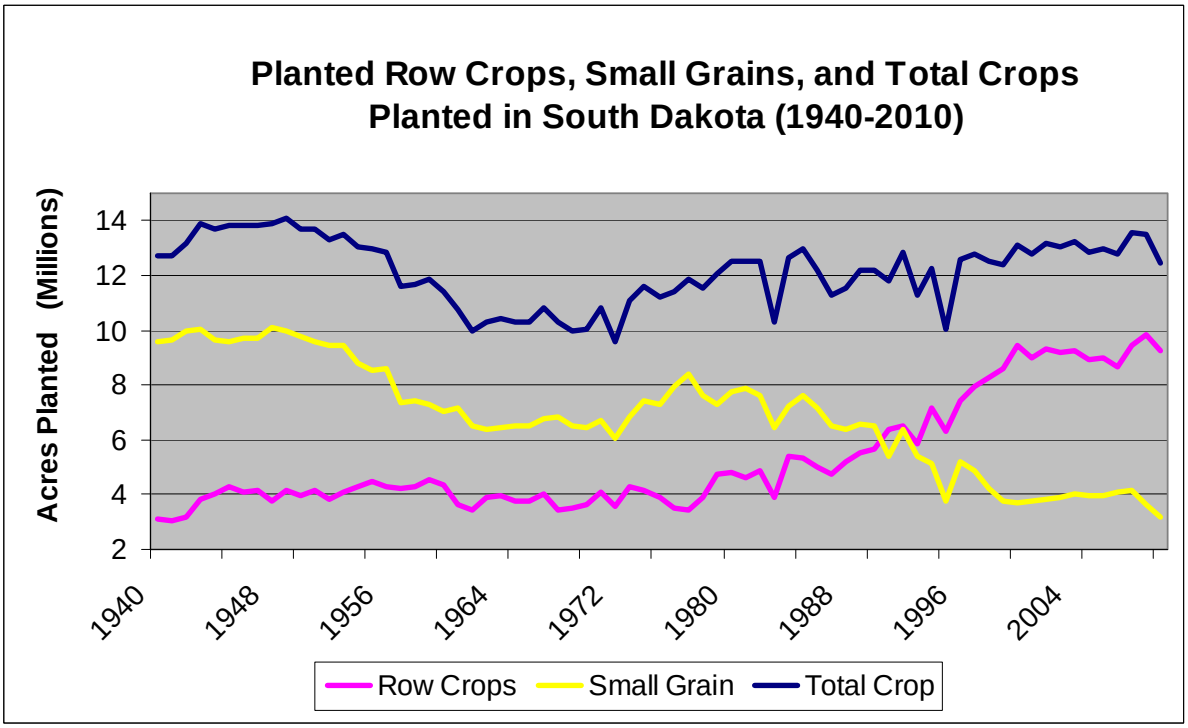


Figure 9. Total Conservation Reserve Program acres in South Dakota 1985-2010.

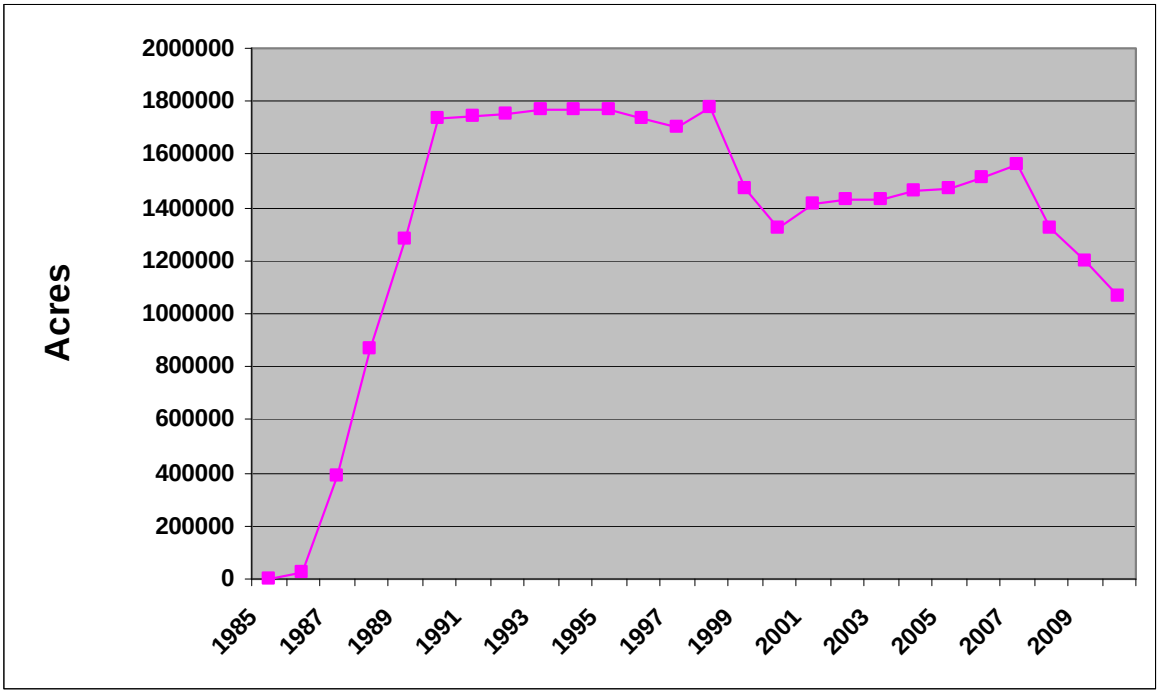


Figure 10. Wind energy classification classes for South Dakota (U.S. Department of Energy 2010).

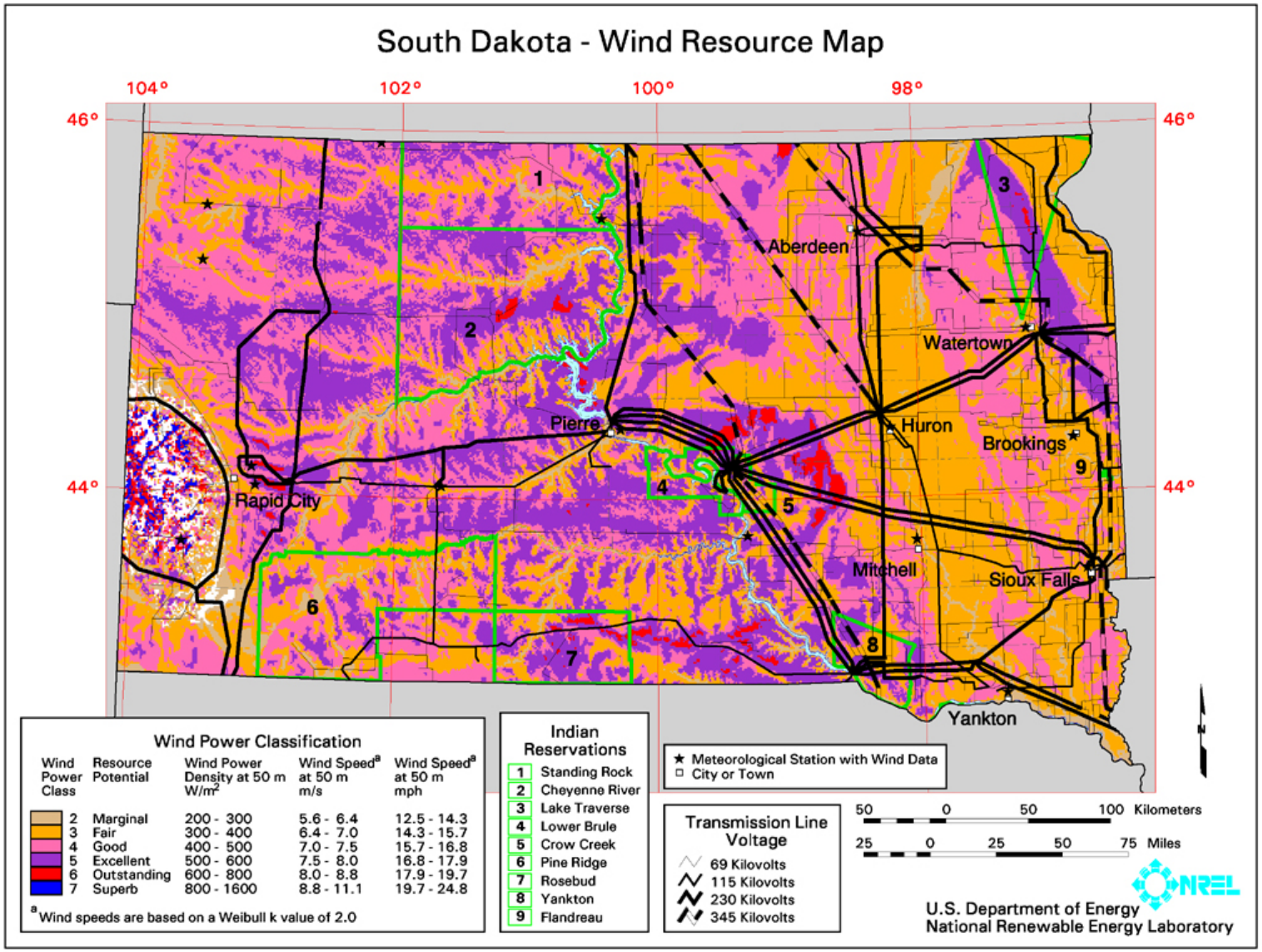
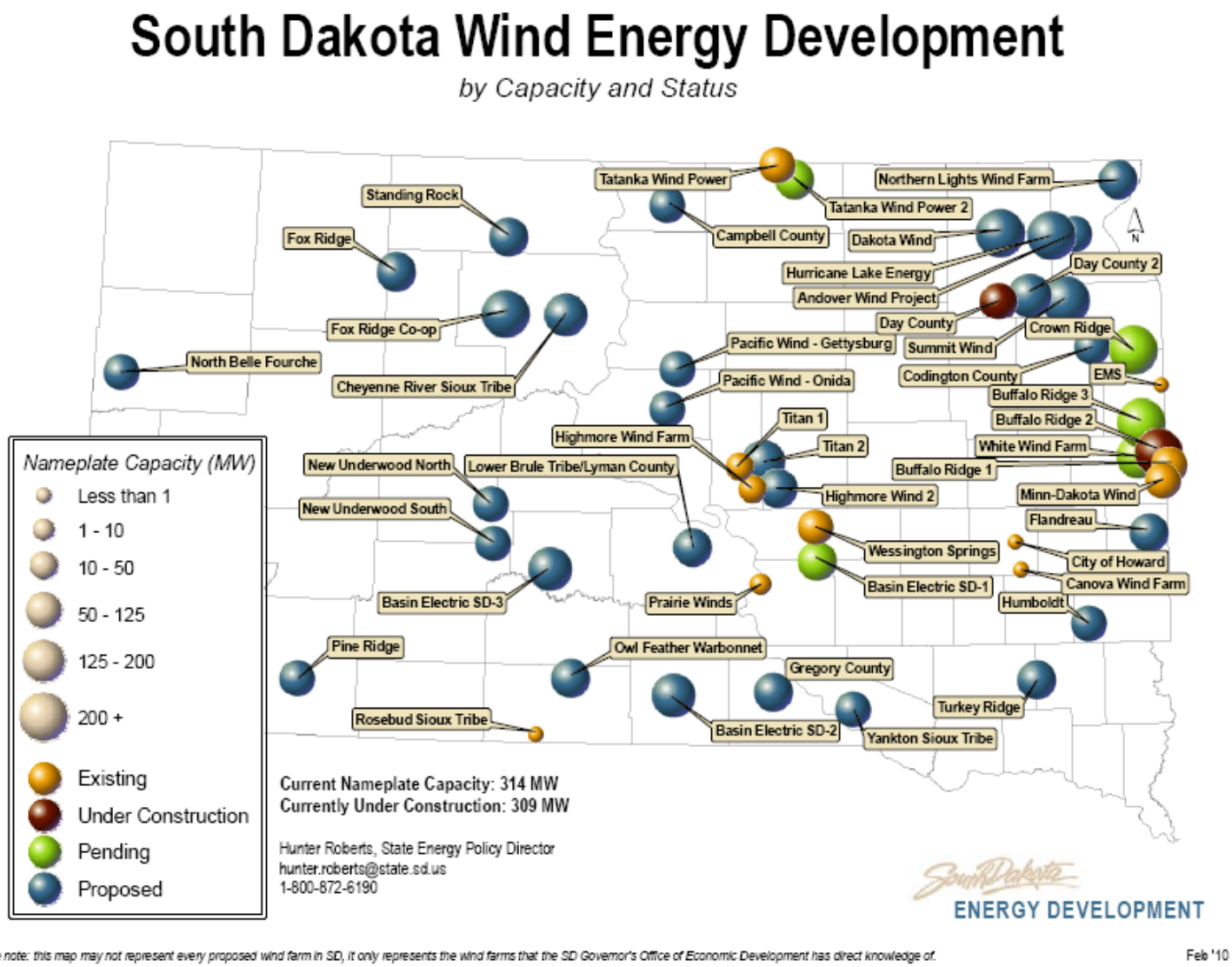


Figure 11. Wind energy project status in South Dakota (South Dakota Wind Energy Association 2010).



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