

Ft. Pierre National Grassland— Mixed-Grass Prairie and Grouse

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To a listener on a knoll in Ft. Pierre National Grassland during a crisp spring morning, the booming of male Greater Prairie-Chickens gives the air an electric ring. Out over the soft, undulating ridges, one sees a prairie much like that which originally covered the central part of our country. Although the grassland preserves the elemental physical nature of the prairie, it also sets the stage for contention over its resources, arguments that sometimes seem as timeless as the land itself.

The grassland's 116,000 acres lie in central South Dakota, just west of where the 100th meridian slices the Missouri River. At that longitude, much of the other land is privately owned, and the sod has been turned to grow grasses such as wheat and corn. But the expansive flats and rolling hills of the national grassland still support native vegetation like western wheatgrass, green needlegrass, and big and little bluestem. Adjacent farmer/ranchers—in addition to wheat and corn—raise sorghum, sunflowers, and alfalfa. That mix of native prairie and crops creates excellent potential habitat for Greater Prairie-Chickens and Plains Sharp-tailed Grouse.

Ft. Pierre National Grassland is administered by the Nebraska National Forest, USDA Forest Service. Like all national grasslands, it is managed for multiple uses. A grazing association of 33 members and six additional ranchers who deal directly with the Forest Service have permits to graze about 51,500 animal-unit-months of livestock. Generally, balancing commodity production, wildlife habitat, and recreation on public land is an art and science fraught with controversy. The recent history of the management of this grassland has been no exception.

Years ago, the grassland had been grazed so intensively that complaints were heard as to effects on wildlife habitat. Then in 1984, a land and resource management plan prescribed the area for wildlife habitat emphasis. After extensive public involvement, in 1992 the forest supervisor issued interim management guidelines that set cattle stocking somewhat lower than a range analysis rate would allow. She also decided to rest 8% of the grassland annually from graz-

ing. Grazing rotation systems were improved by combining livestock herds so that higher numbers grazed for shorter periods in individual pastures. In 1998, after intensive monitoring and an environmental analysis, the forest supervisor decided to continue the management with modifications.

After an unsuccessful administrative appeal of that decision, the local grazing association filed a lawsuit to return to the higher stocking level. But in August 2000, a federal judge ruled in favor of the Forest Service. That decision has also been appealed.

All along, habitat on the grassland has been monitored. The Plains Sharp-tailed Grouse was designated as a species to be used to indicate the effects of management. Since it is a species to which nesting cover is a very important life requisite, a Robel pole, modified for the mixed-grass prairie, has been used to measure the visual obstruction of the residual grass cover. Extensive readings have also been made on pastures rested from grazing for two years, which are thought to be the best potential nesting cover. Visual obstruction of cover on grazed pastures compared collectively with that of potential cover has provided an index to habitat suitability for grouse.

Information on grouse populations has been determined from other surveys and helps to assess the effects of management and weather:

- Since the late 1980s, the Forest Service and South Dakota Game, Fish and Parks Department have counted displaying male grouse on separate areas of the grassland. In the Forest Service monitoring unit before management changes, prairie chickens were slightly more numerous than sharptails. Lately, the prairie chicken numbers have been more than three times those of sharptails, and the overall grouse population is higher.

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populations but also actually contribute to the present situation.

Prior to introduction of livestock, most plant communities supported healthy understories of perennial grasses and broadleaf herbs. Improper grazing eliminated or seriously diminished this component, leaving areas open for invasion by exotic species. Annual weeds, principally cheatgrass, first appeared in the West early in the late 1800s or early 1900s. By the mid-1920s, cheatgrass was widespread, perhaps occupying most of its current range. Reduction or elimination of livestock grazing has little impact on local vegetation once native herbs are eliminated and annual weeds gain dominance. Nevertheless, suspension of livestock grazing can facilitate natural recovery where some native herbs persist.

Cheatgrass and other annual weeds have significantly altered fire regimes in the West. Sites that naturally burned at infrequent intervals now burn more frequently as fires ignite in the continuous mat of fine cheatgrass litter that accumulates on the soil surface. Frequent burning eliminates native perennial species, including big sagebrush, and improves conditions for cheatgrass and other invasive species to gain total dominance. When this happens, native habitat is lost or fragmented. Similarly, grazing and fire control results in the loss of native herbaceous and shrubby plants and allows pinyon/juniper woodlands to increase in density and spread into areas of big sagebrush. As trees gain dominance, the understory species eventually are eliminated and sage-grouse and other species dependent on them decline.

Can trends in shrubland degradation be reversed? Of equal importance, can sagebrush and other shrubland communities be restored? Experts at the Symposium identified reduction of annual grasses and, where necessary, pinyon/juniper stands as major challenges. Cheatgrass is a formidable foe and requires extensive measures to exhaust seedbanks. Mechanical tillage can be effective, but destroys residual native species. More recently selective herbicides have become available that, if used properly, can control annual grasses without damaging perennials. Burning cheatgrass before seeds drop destroys some seeds, but this approach kills sagebrush plants and is not effective in depleting the seedbank. Symposium experts concluded that, because recovery of Wyoming sagebrush, black sagebrush, and other sagebrush species is usually quite slow, large areas or important stands of these species should not be burned to reduce shrub or weed density.

Pinyon and juniper populations can be reduced mechanically or in some situations by burning to release understory species or facilitate seeding. However, burning destroys residual big sagebrush plants, and broadcast seeded sites still must be covered to plant the seed. Anchor chaining may be the most effective and least destructive tool available because it can be regulated easily to remove the number and size of trees desired, and it can be adjusted to attain the degree of soil tillage required to create seedbeds or cover seed.

Symposium participants agreed that use of native species is essential for restoring wildlife habitat. Adequate amounts of sagebrush seed normally can be collected from wildland stands to meet annual needs. Native perennial grass supplies are currently inadequate, but new releases of major native species are becoming

available, and acreages of cultivated seed fields are increasing. Native broadleaf forbs are critical for sage-grouse and other wildlife, but seed supplies are extremely limited at present. A major effort initiated by the USDI-BLM in cooperation with state and Federal agencies and private growers is identifying populations of important native broadleaf forbs and supporting the research and development necessary to facilitate commercial production.

Planting individual species or a combination of grasses and sagebrush has been the primary method of restoring sagebrush and other shrub communities to date. Seeding mixtures of shrubs, grasses, and broadleaf forbs presents new and complex problems. Successful seedings have been accomplished by matching adapted ecotypes of big sagebrush and other shrubs and herbs to specific sites. Reestablishing native communities is possible, particularly in mountain big sagebrush and pinyon/juniper woodlands. Successful restoration of the more extensive and more arid Wyoming big sagebrush communities is much more dependent on seasonal precipitation, but Symposium experts reported that success in these areas is attainable.

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- In spring 1999, male grouse on display grounds were counted across the entire grassland with the help of two contractors. In all, 213 grounds were noted, with about 1500 male grouse displaying. Over 75% of the male grouse counted were prairie chickens.

- Since 1992, grouse wing-collection boxes with explanatory signs have been set on the grassland during the first weeks of the hunting season. Mean annual number of wings collected has been 722. The mean juvenile to adult ratio for the combined species has been 2.43:1, with a range over those nine years of 1.94:1 to 2.90:1.

Although the presence of a productive grassland always seems to create disagreement over allocation of its resources, both ungulate herds and grouse were part of the original mixed-grass prairie. By considering all the angles of the issue, a compromise can be reached, and both grazing and wildlife habitat can be accommodated.

More information on the management of Ft. Pierre National Grassland can be obtained from Anthony DeToy, District Ranger, at (605-224-5517) P.O. Box 417, Pierre, SD 57501.



Greater Sage-Grouse brood habitat
Kent L. Christopher photo