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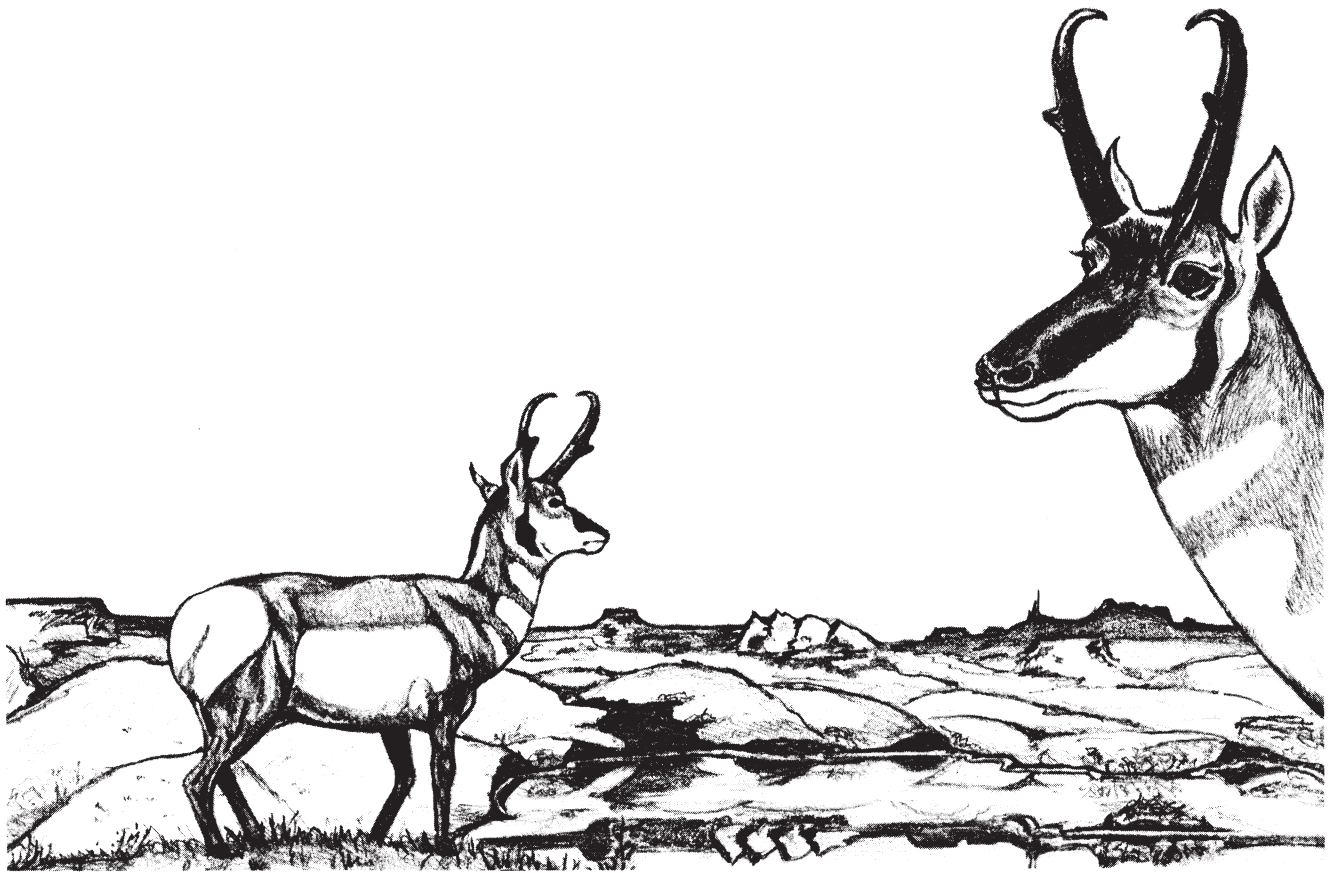
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# Pronghorn and Agriculture: Maintaining a Balance

Mary C. Gibbs, Jonathan A. Jenks, and Bok F. Sowell\*

The rangelands (grasslands and sagebrush lands) of western states have for centuries supported herds of pronghorn in addition to bison, elk, and deer. Prior to 1800, pronghorn numbered over 700,000 in South Dakota.

With increased human settlement, pronghorn decreased drastically and were near extinction by the end of the 1800s. Market hunters and subsistence hunting, disease, severe winters, fencing, and conversion of native rangelands to annually tilled croplands contributed to the decline.

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In 1911, the South Dakota Legislature responded to dwindling pronghorn herds by passing a bill making it unlawful to hunt, shoot at, kill, wound, or capture any pronghorn. Under protection, pronghorn numbers increased; in 1942, the South Dakota Department of Game, Fish and Parks (GFP) issued 500 permits for the first pronghorn season in 32 years.

In the following decades, pronghorns continued to increase under a system of managed harvest. By 1983, the statewide population numbered over 67,000 (Fig 1).

Many things affect pronghorn abundance, but none so quickly as weather. For example, the pronghorn population in South Dakota was reduced by 79%, from approximately 50,000 down to

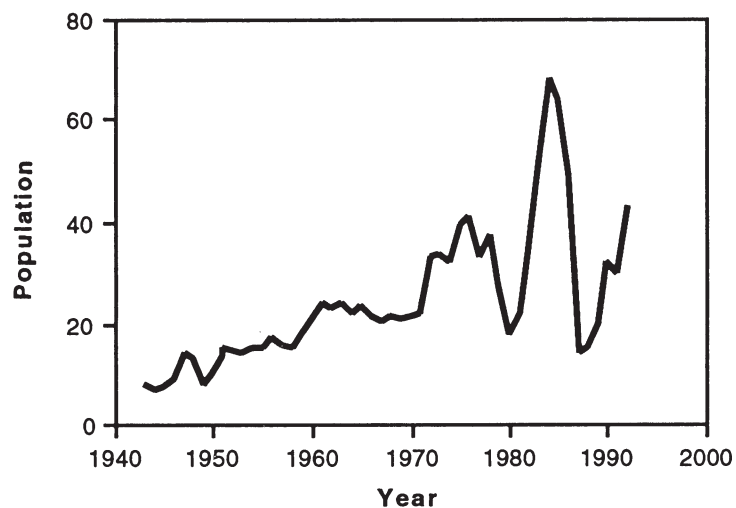
14,000 animals, during the severe winter of 1985-86. By 1992, the population had recovered to over 43,000 animals.

Nearly 43% of the statewide population occurs in Harding and Butte counties in northwestern South Dakota. High densities of pronghorn coupled with the conversion of native rangelands to cropland has created some problems. Landowners have cited pronghorn for crop depredation and grazing competition with domestic livestock.

## Description

Pronghorn belong in the family Bovidae with sheep, cattle, and bison. As with bovids, pronghorn are characterized by horns and no dew claws or gall bladder.

Figure 1. Pronghorn population trends, 1943-1992.



The pronghorn is named for the large prong projecting from the horns on males. Females have no prong on their horns, which are generally shorter than their ears. The horns are covered by an outer sheath of cartilaginous hair; the sheath is shed annually in November.

Upper body parts of pronghorns are reddish-brown to tan. A black mane covers the neck; and the underparts, rump, and bands under the neck are white. Males, but not females, have a black, masked face and black cheek patches.

Mature bucks average 114 lb and does 92 lb, live weight. Compared to deer, the pronghorn's relatively larger heart and lung capacity give it excellent running endurance; a healthy animal can reach 40 mph for extended distances.

The pronghorn's most acute sense is eyesight. The eyes are 2 inches in diameter and set close to the top of the head, giving the animal exceptional long-distance vision and also the remarkable ability to peer over a rise without exposing itself to predators.

Pronghorn live in rolling, expansive terrain that offers great visibility and mobility. They generally form herds of about 10 to 15 animals but usually group into larger herds of up to 100 individuals during winter months.

## Life history

Pronghorn bucks establish breeding territories with small bands of does in September. Dominant bucks will ferociously pursue subordinate males, but physical combat is rare. By mid-October, the rut is completed and small groups begin herding together into larger bands for winter.

Daily movements depend primarily on forage availability and terrain. Pronghorn travel farther during fall and winter, because of mating behavior and reduced forage availability, than during summer and spring when both forage and water are plentiful. Annual home ranges vary from several hundred acres for kids and yearlings to several thousand acres for adult males.

Pronghorn in western South Dakota generally do not migrate long distances when seasons change. However, during unusually harsh winters, blizzards and deeply crusted snow can make forage unavailable, and migration can be lengthy.

Does usually breed for the first time as yearlings. After a gestation of 240 days, does isolate themselves from other pronghorn to give birth. Kids are inactive the first week of life, but they develop rapidly. At 5 days, many kids are able to outrun a human.

By 2 weeks they can easily outdistance a coyote. At 3 weeks, kids will begin to nibble vegetation; most are totally weaned by mid-September.

Pronghorn mortality is greatest during the first few weeks of life, with coyotes the primary predators in South Dakota. However, predation on a healthy herd generally will not limit herd growth. Pronghorn live 7 to 10 years.

## Habitat and food habits

Rangeland containing a variety of grasses, forbs, and browse that grows less than 24 inches high is prime habitat for pronghorn.

Pronghorn, like deer, are browsers, meaning they prefer to eat forbs and the twigs and leaves of woody plants. During winter months they depend mainly upon two species of shrubs, big sagebrush and silver sagebrush, for survival. The leaves of big sagebrush contain protein and carbohydrate levels that are similar to alfalfa meal.

In early spring, pronghorn shift to a diet of grasses high in protein and vitamin A, but grass quickly declines to less than 4% of their diet when forbs make their appearance on the prairie in April. Forbs such as wild parsley, wild lettuce, and goatsbeard are the predominant food source during summer. By mid-August, forb use declines, and use of other browse plants increases through the fall.

## Pronghorn and agricultural crops

The degree to which pronghorn use cropland is affected by weather conditions, distribution of cultivated land, type of crop, and density of pronghorn. Pronghorn are more likely to use cropland when range resources are depleted from drought and/or severe weather, as during the severe winter of 1985-86. During that year, complaints of pronghorn in winter wheat fields were high.

Since 1988, only 14 reports of pronghorn depredation on cropland in western South Dakota have been filed with GFP in Pierre.

Cropland that is away from human disturbance and/or surrounded by considerable amounts of rangeland is subject to higher use by pronghorn than lands adjacent to roads, houses, or towns.

In Montana and South Dakota, alfalfa fields can be an important year-round habitat for pronghorn. In one study, alfalfa fields comprised about 3% of the area and pronghorn spent 14% of their time on them in March and April. This decreased when native forbs became available, and averaged 4% during other months of the year. However, in Montana, total time on alfalfa fields averaged 14% year long, and reached 50% in mid-September. Reasons for variability in usage are related to forage availability, weather conditions, and pronghorn density.

Small grain fields comprise about 6% of the land area in northwestern South Dakota, and pronghorn use them about 4% of the time throughout the year. Pronghorn use of spring planted wheat is maximum, 7%, during May and June, when wheat begins to green up. Time spent on winter wheat fields is greatest from November to March, then decreases substantially in other months.

Yields (bushels per acre) of small grains have been compared for croplands frequented by pronghorn and those that were not. There were no measurable differences even when use was considered high.

Diets of pronghorn in central Montana were determined for each season of the year. Sprouted grain, mostly winter wheat, averaged <1% in spring, 10% in summer, 9% in fall, and 5% in winter diets, although it comprised about 20% of the area sampled. Waste grain in diets amounted to 23% during the winter, and 15% in spring.

Pronghorn also select Conservation Reserve Program (CRP) lands during winter months in northwestern South Dakota. CRP is comparable to alfalfa because it is commonly planted to a mixture of alfalfa and sweet clover. In some areas, availability of CRP could partially alleviate pronghorn use of croplands in winter.

In Harding County, South Dakota, pronghorn spent an average of 76% of their time on native rangelands, 18% on agricultural crop lands, and 6% on CRP lands in both 1989 and 1990 (Table 1).

## Pronghorn use of rangelands

Pronghorn commonly coexist with domestic livestock on rangeland in western South Dakota, as they did with bison and other wild herbivores prior to settlement by Europeans. The degree to which competition exists between pronghorn and livestock depends primarily upon dietary similarity of the species, season of use, range type, and range condition.

Dietary overlap of pronghorn and cattle is low. Grasses make up to 85% of the diet of cattle in all seasons, yet average less than 10% of the diet of pronghorn during summer, fall, and winter. Competition could be greatest in early spring when pronghorn may consume up to 20% of their diet in grasses. However, grasses are usually plentiful during this season.

Pronghorn and cattle can benefit each other. Man-made water developments such as stock ponds are used regularly by pronghorn, and pronghorn often consume plants known to be noxious to cattle, such as larkspur, death camas, and halogeton.

The potential for competition between pronghorn and sheep is greater than with cattle because both sheep and pronghorn readily consume forbs and shrubs, although sheep do prefer grasses when available.

Pastures heavily grazed by sheep for long periods generally have increased amounts of warm-season grasses and less silver sagebrush, an important winter forage for pronghorn. Pastures grazed by sheep receive low pronghorn use, especially during winter.

Pronghorn and sheep generally do not compete on rangelands in good condition where resources are not limiting. However, the potential for competition exists on rangelands that have been overstocked.

Woven-wire fences and improperly strung barbed wire can impede pronghorn movement. Pronghorn tend to go under or through barbed-wire fences and rarely jump fences higher than 32 inches. During harsh snowstorms, pronghorn can become trapped by fences and die of exposure.

Fences of high tensile-strength smooth wire 18 to 20 inches above the ground allow both antelope movement and adequate sheep management.

Cattle and sheep generally avoid rough topography often inhabited by pronghorn; however, some competition for space between livestock and pronghorn can occur during the fawning season when does seek isolation. When livestock occupy preferred fawning sites, does will move onto less suitable sites, increasing vulnerability of the newborns to predation.

**Table 1. Percentage of time pronghorn were observed on vegetation types in Harding County, South Dakota, 1989-1990.**

| Land use    | Percentage of time |            |            |            |            |  |
|-------------|--------------------|------------|------------|------------|------------|--|
|             | Jan<br>Feb         | Mar<br>Apr | May<br>Jun | Jul<br>Aug | Nov<br>Dec |  |
| Alfalfa     | 4.7                | 14.2       | 2.4        | 4.8        | 6.2        |  |
| CRP         | 9.9                | 2.0        | 3.2        | 7.4        | 8.8        |  |
| Small grain | 1.2                | 0.7        | 7.5        | 3.5        | 0.0        |  |
| Rangeland   | 67.5               | 78.9       | 84.5       | 79.6       | 68.8       |  |
| Other*      | 16.8               | 4.4        | 2.6        | 5.0        | 16.3       |  |

\* crested wheatgrass, fallow, small grain stubble

Pronghorn generally have low incidence of diseases or parasites, and studies show that disease and/or parasite transfer between pronghorn and livestock is unlikely.

## Management

Objectives of pronghorn management in South Dakota are to keep the population well distributed and within landowner tolerance. Providing recreational opportunity also is important. These objectives are accomplished by censusing the population annually and adjusting the harvest of animals in the fall.

An annual aerial census is conducted by GFP in spring to determine population distribution and numbers. From this survey the total pronghorn population in western South Dakota is estimated.

Regulated hunter harvest is the most important management tool for pronghorn. In early summer, doe-fawn data and known landowner complaints are used to establish the number of permits per area for the fall season. Hunting units are established on a flexible unit and permit quota system. The permit quota system enables managers to increase, stabilize, or reduce herds independently.

Since 1987, hunter success rates have averaged 75% for licensed rifle hunters and 19% for licensed archery hunters. Harvest consists of approximately 75% bucks and 25% does.

## Summary

Pronghorn are natural herbivores of western South Dakota prairies. Their diet consists primarily of shrubs in the fall and winter and of forbs in the spring and summer.

Pronghorn are known to use alfalfa and wheat fields when available within their home range. However, overall use of cropland is moderate to low, and there is no evidence of a detectible reduction in crop yields due to pronghorn use. Although problems can exist on rangelands in poor condition grazed by sheep, pronghorn generally do not compete with livestock on rangelands in good condition with abundant and diverse vegetation.

Hunter harvest is based on population trend data and landowner tolerance of pronghorn, and is the principal tool used in controlling distribution and density of populations.

As long as pronghorn exist in South Dakota, there will be some conflicts with agricultural interests. However,

with proper management by GFP and an understanding of pronghorn habits by land operators, these conflicts can be placed in their proper perspective and minimized.

For more information on pronghorn of western South Dakota, contact South Dakota State University at 605-688-6121. To report complaints or problems with pronghorn, contact your local wildlife conservation officer or the South Dakota Department of Game, Fish and Parks Office in Pierre at 605-773-3381 or in Rapid City at 605-394-2391.

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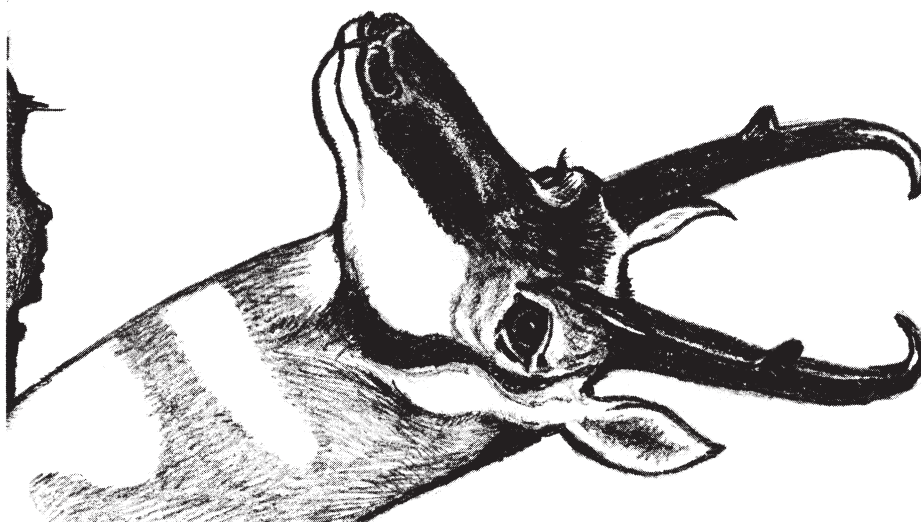


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