Managing Rangelands for Pronghorns

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Today the American pronghorn antelope (*Antilocapra americana*) inhabits many historic ranges occupied during the early 1800's. The antelope's pristine numbers, however, have been greatly reduced. These native big game animals were on the verge of extirpation by the year 1900 but have experienced a 1,500% increase during the past 50 years. Pronghorns inhabit western rangelands from northern Mexico, up through all the western states of the United States, and into the southern short grasslands of south-central Canada. They coexist with domestic livestock now just as they did with the American buffalo (*Bison bison*) for centuries prior to the arrival of European man.

The objective of this article is to identify recommended range management practices to maintain or improve forage, water, and range conditions in accordance with the habitat requirements of the American pronghorn antelope.

Native Rangelands

Native rangelands which have developed over eons into natural vegetative communities and remain in good ecological condition today should be maintained in good condition. This is especially important to historical antelope ranges, which possess vegetal characteristics favoring antelope habitat requirements.

It is postulated that pronghorns thrive best on ranges in a subclimax vegetative condition. Such conditions were created in the past by (1) wildfires caused by lightning, and (2) seasonal grazing by herbivores such as bison, elk, and deer. The vegetative community, in constant change, in turn produced a variety of mixed forage classes of grasses, forbs, and shrubs.

Vegetation Type Conversions

Extensive areas of dominant (more than 30%) big sagebrush (*Artemesia tridentata*) are often low density ranges for antelope. This is especially true where the brush is 76 cm or higher. Such areas can be treated to decrease sagebrush quality and height thereby creating desirable antelope habitat. One of the major objectives of brush control is to decrease shrubs which are competing with grasses and forbs. Two points should be considered in such treatments: (1) it is best to plan projects not too large in size (preferably less than 405 ha); (2) the project should maintain around 5 to 10% shrub cover.

Brush control is frequently accomplished by mechanical practices such as plowing or chaining. Plowing with large brushland plows often kills native plants, especially highly preferred forbs. Chaining, accomplished by two large tractors pulling a heavy anchor chain between them, does not kill as many shrubs and is less damaging to native grasses and forbs.

Chemical spraying is another commonly practiced shrub control technique. The spray can be largely plant specific thereby controlling sagebrush and not harming native grasses and most forbs. The practice can favor antelope ranges with low sagebrush but leaves tall dead shrubs on big sagebrush treated areas.

Prescribed burning has been used to date in only limited cases to improve antelope ranges. This practice has many natural characteristics favorable to improving ranges for antelope. When properly accomplished, prescribed burning can decrease domin-

An adult doe antelope jumps through an "antelope pass" structure built in a range fence near Casper, Wyoming. (Photo by Ray Mapston)

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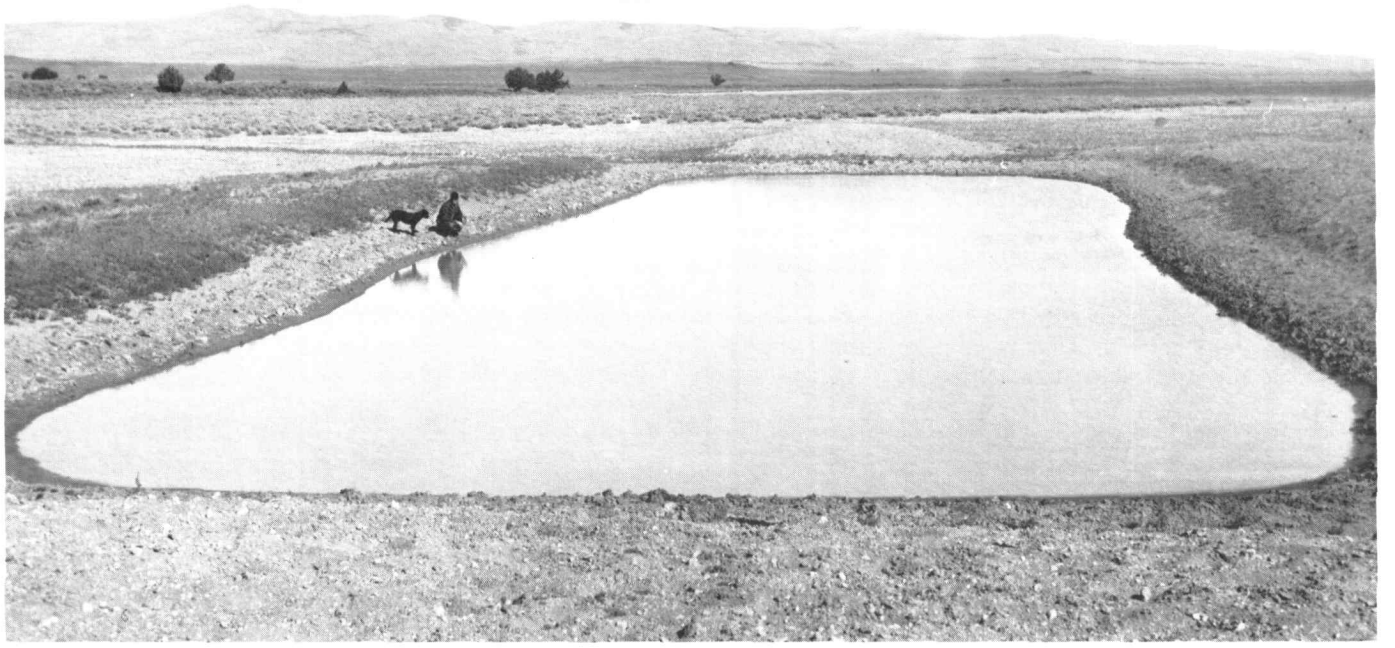
Editor's Note:

1 cm equals .3937 inches	1 inch equals 2.54 cm
1 ha equals 2.471 acres	1 acre equals 0.405 hectare
1 l t equals 1.0567 quarts	1 quart equals .94625 liter
1 kg equals 2.2046 pounds	1 pound equals .454 kilogram



Large open "dugout" water catchment pits, as portrayed above, have been highly used by antelope as well as livestock near Lakeview, Oregon (Photo by Jim Yoakum)

ant shrubs and create a more natural mixed community of grasses, forbs and shrubs.

Antelope ranges having insufficient native plants for natural reproduction can be seeded. Past seeding ventures have often resulted in monocultures of exotic grasses. These seedings are of limited value to pronghorns other than as a decrease in shrub quality and height. However, mixture seedings containing legumes have proven highly beneficial to pronghorns. Such seedings are optimized when there are a number of native species included. A good rule of thumb is a minimum of 6 species each of grasses, forbs, and shrubs.

Introduction of dryland Nomad variety alfalfa (*Medicago sativa*) has been one of the most successful techniques carried out on antelope ranges in southeastern Oregon. In excess of 22,700 ha involving 36 separate seedings have been planted to date. The alfalfa was generally aerially seeded onto plowed sagebrush ranges following drilling to adapted grasses and shrubs. Recent analysis of the seedings disclosed that the majority have maintained alfalfa composition at a level of 10% of the vegetation present over a 6-year or longer period. The seedings have increased the forb composition from a 2% in untreated areas to 7% in seeded areas. During the August 1976 antelope census, more antelope does with fawns were observed in grass and forb seedings than on adjacent shrub-dominant rangelands.

Water Management

Measurements of water consumption by antelope on the shrubgrass steppes of Wyoming showed daily water consumption rates per antelope varied from .34 liter per day in May to 4.5 liter per day in August. Total monthly precipitation, evaporation, succulent vegetation, nursing does, mean temperature, and average maximum temperature had marked effects on the average daily water consumption rates. A close relationship was observed between antelope and water distribution in the state. Ninety-five percent of 12,000 antelope counted by air were within a 6-km radius of water.

Antelope have been observed using every type of water source available: springs, creeks, rivers, lakes, and reservoirs (Figure 2), stock water developments, galvanized troughs fed by windmills, and troughs filled by springs. They did not appear to avoid any manmade water device developed for livestock.

The installation of precipitation catchment facilities (guzzlers) on ranges lacking proper water distribution have been successful for these animals. Such water developments are relatively maintenance free, not expensive, and serve a variety of wildlife and domestic livestock.

Livestock Fences

Fences have been a serious problem to antelope survival in many areas. The root of the problem is that antelope have adapted survival patterns based upon the ability to move freely from areas of deep snows or inadequate forage and water. When these natural movements are curtailed or restricted, the result has been disastrous. Then too, there exist today areas fenced with woven-wire that completely denies use of rangelands by antelope. This factor contributes to the production of fewer antelope at a time when the public is requesting both livestock and wildlife production on public lands. Recommendations from antelope-fence studies state that when fence construction is necessary, the following specifications are best for antelope welfare:

1. Net-wire fences are generally barriers; therefore, their construction on antelope ranges is discouraged.
2. Barbed wire fences should be constructed to the following specifications:
   a. bottom wire at least 41 cm from the ground.
   b. next wire up 25 cm.
   c. next wire up 25 cm, comprising a total of 91 cm height from ground.
   d. bottom wire should be smooth wire, for antelope generally go under fences, barbless wire minimizes physical injuries.
   e. no stays between posts, as this provides for a less tight fence allowing easier antelope passage.
   f. important antelope travelled pathways, migration routes, etc.,

should allow for low height, lay down panels, or pass structures.

g. Fenced areas should be kept as large as possible, thereby providing an opportunity for antelope to obtain all the basic habitat requirements.

"Antelope Passes" have been used in some areas to facilitate antelope movement through fences. These devices are essentially miniature cattle guards 122 cm wide rather than the standard 312 cm structures; vehicles cannot cross them and neither can domestic animals. Such Passes are placed at locations characteristically used by the animals, with corners of fence lines a favorite location for the installation of this type of device. When properly placed, passes help facilitate antelope movement but are a second choice to properly constructed fencing.

Discussion

Habitat improvements specifically designed to improve range conditions for pronghorns are few and have had possibly only a minor affect on antelope populations. However, many range improvements constructed for other purposes have had some major affects, both advantageous and deleterious, on antelope. This entire subject is now well documented in reports or publications but more information is becoming available and warrants discussion at this time.

Fences constructed to control livestock or delineate highway rights-of-way have been repeatedly reported as a serious mortality factor to antelope. Such reports are substantiated from the open grasslands of Wyoming to the semiarid regions of Texas. The deleterious affect of both direct entanglement mortality and the much greater factor of entrapment and restricting migrational movements for survival are well documented. This does not mean that all fences are problems to antelope everywhere, but the evidence is substantial that fences are a serious mortality problem to certain antelope herds on a regional basis.

It is also known that proper fence construction planning to include designs allowing more free antelope movement would do much to enhance antelope welfare. All managers responsible for planning and constructing fences on ranges where wildlife values are of importance would do well to consider the tried and tested fence designs which allow access by antelope. Just how beneficial vegetative type conversions or water developments have been to pronghorns is a matter not quantitatively reported to date. However, this subject is becoming increasingly apparent as more cases become known. There are two recent cases that substantiate well the values of multiple range imrovements for the benefit of antelope.

At a Antelope States Workshop, held in Casper, Wyoming, R.M. Kerr reported on the interrelationships of antelope to habitat for the Tres Piedras herd in north central New Mexico. This area underwent extensive vegetative type conversions, fence construction, and water developments primarily for livestock but with proper considerations for antelope habitat requirements. The results within 3 years recorded a 130% (from 300 to 750) increase in the antelope population.

The second case of a large-scale range rehabilitation program affecting antelope numbers is the Vale project in southeastern Oregon. The project encompasses 100-by 180 km of primarily sagebrush-grassland steppe rangelands. During an 11-year period, approximately $10 million was spent on the following range improvements: 205,000 ha brush control; 108,000 ha seedings; 3,330 km fence construction; 1,600 water developments, and 741 km of pipelines. The adjacent rangelands in Oregon, Idaho, and Nevada underwent only minor range improvements during this 11-year period.

Now, 3 years following completion of the Vale project, it has been substantiated that the antelope population has increased 100% (from 1,000 to 2,000) while at the same time antelope in surrounding adjacent rangelands have remained relatively static. The evidence is circumstantial, but it is indicative that properly implemented large-scale vegetative manipulation projects combined with water developments can be highly beneficial to wild free-roaming antelope herds.

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