

Protecting and managing deer winter range at Antelope Valley Wildlife Area

In spring, migratory mule deer in the Sierra Nevada mountains of California travel to higher elevations and occupy their summer range (usually over 5,000 or 6,000 feet in elevation). Does have their fawns and raise them in abundant, nutritious habitats. As winter approaches, they move to lower winter ranges where the snow is usually less than 18 inches deep. During the most severe winter conditions, deer concentrate further into what is known as “winter range.” Winter ranges are limited in size, especially on the east side of the Sierra Nevada. If deer are fortunate, the winter range contains at least the very basics needed for survival, edible brush and other forage available above the snow and shelter from severe weather and water. The deer themselves also need a fat reserve carried over from the summer range.

The migratory routes that deer travel between their winter and summer range are their “intermediate ranges.” They are important because does – heavy with unborn fawns – need to be well fed along the way. In the fall, intermediate ranges with abundant forage are valuable for building their fat reserves. This is

especially important for male deer which may quit eating during the late fall and early winter mating season.

Whether deer are on the winter, summer or intermediate ranges they prefer areas of “early successional habitat.” Recent disturbance such as fire or logging results in early successional habitat. Following such disturbance, a cycle of succession is set into motion in which grasses and forbs quickly invade

By Ronald D. Rogers

and are dominant for a short while, followed by shrubs and other woody vegetation, then small to large, often broad-leaved trees. The slower growing but ultimately taller pines or firs, often called the dominant species, eventually over-top and shade out most other plants. The dominant species will tend to maintain itself in dense stands until a new disturbance occurs. Although some wildlife species depend on the last stage of the cycle for their existence, the early stages of the cycle typically support the greatest numbers and diversity of wildlife. Deer and many

other wildlife species respond well to habitat work that encourages early successional vegetation.

Quaking aspen groves are a special type of early successional habitat occurring at high elevations on sites near water. A colorful part of our Sierra Nevada heritage, they are declining at an alarming rate. Aspen groves spread by root suckering, so all trees in a grove covering several acres may be from the same massive root system. Following fire or other disturbance, new suckers spring up and regeneration of the grove is rapid. Shading-out by conifers through over-protection from fire, plus heavy livestock grazing and browsing are the major reason for the decline of this resource. Healthy aspen groves support a very high diversity of plant and wildlife species and are very important to migratory deer.

By the 1970s, deer numbers in much of California were dropping substantially. To this day, the decline continues over much of the eastern part of the state. Urban encroachment and intensive timber management that eliminates early successional habitat along with natural succession are seen



DFG photo by Syd Kahre.

Deer winter range near Antelope Valley Wildlife Area. In spring, migration to summer range begins.



Mule deer on winter range at Antelope Valley Wildlife Area.

DFG photo by Syd Kahre

by many biologists as major factors in this decline. As biologists examine the needs of migratory deer, winter ranges are often seen as the weak link in the chain. Urbanization and residential development are quickly reducing what remains of the already limited resource.

In 1977, DFG biologists became concerned with a major, high density residential subdivision that was to be built on winter range and intermediate ranges in Sierra County near the town of Loyalton. This would have destroyed part of the winter range and caused serious negative impacts over a larger area through disturbance to deer by people and domestic dogs, blocking of a traditional migratory corridor, loss of deer to collisions with automobiles and other factors. Something had to be done to protect this important habitat.

In 1980, over 5,000 acres of this proposed subdivision were purchased by the Department of Fish and Game (DFG) and is now known as Antelope Valley Wildlife Area. Rather than being one compact unit, the wildlife area consists of many blocks interspersed through and surrounded by U.S. Forest Service (USFS) land. Because of the difficulty of managing a large property, the DFG quickly entered into an agreement with the USFS, Bureau of Land Management, Sierra County, Natural Resource Conservation Service and neighboring private landowners. The resulting agreement, known as a Coordinated Resource Management Plan (CRMP) encompasses nearly 21,000 acres (33 square miles). It allows for better cooperation between the participants in dealing with resource management issues related to the land ownership patterns. Through the CRMP, DFG meets



DFG photo by Ron Rogers

Above, a young aspen grove. Enough sunlight penetrates the forest canopy to support a large variety of herbaceous plants. Abundant nutritious forage is available for deer and other wildlife.

Right, early successional habitat resulting from a 5-year-old "cottonwood burn." Bitterbrush, grasses and vigorous aspen regeneration are quickly revegetating the area.



DFG photo by Shelley Blair

many of the land management concerns.

Most of the land within the CRMP is unfenced and the USFS has agreed to manage grazing under their grazing allotment program. Only light grazing for a short duration is allowed. The DFG and USFS monitor grazing impacts each year.

Antelope Valley Creek is a small stream that flows all year. Uses and events surrounding Antelope Valley Creek that lead to severe erosion in this century included a lumber mill, heavy livestock grazing, logging and wildfires. Through the CRMP, erosion controls were put in place. In 1986, with the aid of the California Conservation Corps, a cattle and vehicle exclusion fence was constructed around a major section of the creek in the valley floor. Willows, grasses, sedges and other vegetation responded very quickly to removal of grazing and off highway vehicle use. Rapid revegetation of the area has virtually stopped additional erosion within the fenced area.

Since the late 1980s, DFG has manipulated habitat on the area in sagebrush and juniper stands. In cooperation with the USFS and California Department of Forestry and Fire Protection (CDFFP) several plots of 30 to 80 acres each have been prescribed burned and thousands of antelope bitterbrush seedlings have been planted in the burned areas. Bitterbrush is considered one of the premier deer winter forage plants. The result has been a reduction in old and dense big sagebrush plants and an increase of native bunch grasses and bitterbrush (both naturally occurring and planted). Recent sampling of vegetation in these areas show that the bitterbrush planting effort has been successful, so more projects are being planned. Funding for the projects has been provided through deer tags purchased by hunters.

A note of caution is that cheatgrass, a very flammable fire-tolerant species has invaded the area. Too frequent use of fire can lead to this low-value grass crowding out desirable plant species at the expense of wildlife. At some point, well-timed intensive grazing could be used to reduce cheatgrass in favor of native bunchgrasses, shrubs and other plants.

The threat of wildfire became a reality in 1994 when the Cottonwood Fire, swept to the south and east of Antelope Valley Wildlife Area. When the smoke cleared, over 50,000 acres had burned, with the fire covering several



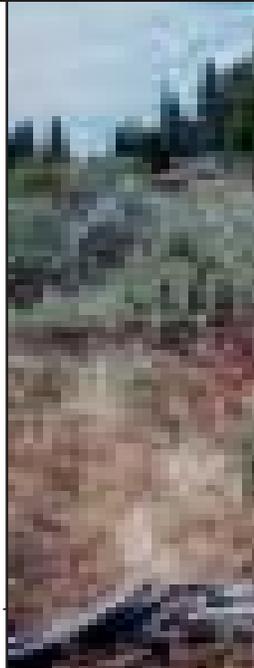
Right, this prescribed fire was designed to reduce the amount of sagebrush and to stimulate bitterbrush regrowth.

DFG photo by Syd Kahre



DFG phot by Ron Rogers

Far right, Site of a prescribed burn, now nearly 10 years old, at Antelope Valley Wildlife Area. Sagebrush (the light blue-green brush in the background), native bunchgrasses and bitterbrush (foreground) are doing well. Between these plants, the already dry cheatgrass can be seen. Cheat grass drops its seeds early and is easily burned shortly after. Too frequent use of fire will favor this grass at the expense of more desirable plants.



DFG photo by Ron Rogers

Left, selected Ponderosa and Jeffrey pine have been removed to release quaking aspen (the white-barked tree) and other favorable early-successional plants. Burning the slash left from logging will stimulate additional aspen and bitterbrush.



hundred acres of the wildlife area and all of the nearby Smithneck Creek Wildlife Area. It had also threatened Loyalton and the nearby community of Sierra Brooks.

DFG recently began a project that will significantly reduce fire fuel loads in the area as well as provide additional wildlife habitat enhancement. The first phase, soon to be completed, is a timber sale designed to thin several hundred acres of the Ponderosa and Jeffrey pine forest to create a disturb the vegetation and encourage early successional habitat. Emphasis is on opening up the forest canopy to rejuvenate aspen groves and to encourage regrowth of bitterbrush, mountain mahogany, native grasses and forbs – all are important components of the deer diet and very desirable wildlife habitats. Habitat work to follow will be funded from the sale of logs.

The second phase of the project involves burning slash and small logs left from the logging operation to remove excess fuel and to stimulate sprouting and germination of desirable fire dependent plants. Certain downed logs will be retained for their wildlife and erosion control values. The USFS has been contracted to plan and conduct the burns with field assistance from the CDFFP. The final phase will be to plant bitterbrush and other desirable plant species in the project area.

At this stage in its development, prescribed fire at Antelope Valley Wildlife Area is probably the primary management tool. This is because most of the plants we are working with, and the wildlife dependent upon them evolved with and adapted to fire. Fire management specialists have developed remarkable ability to control the effects of fire to benefit wildlife. By carefully monitoring such factors as air temperature and humidity, wind speed, moisture in the fuel, amounts of quick-drying twigs and leaves versus slow-drying logs and many other factors, fire models can be developed. From the model, a prescription for maximum wildlife habitat benefits can be achieved. How hot a fire will burn, how fast it will burn, the size of material that burns, whether it will burn only on the forest floor or move into the trees and remove limbs from the lower levels can all be controlled to a large extent by experienced burn managers.

Much of the deer winter ranges of the Loyalton-Truckee deer herd is not forested habitat but is in more low-lying



Above, "Headcutting" on Antelope Valley Creek advances a few feet each year. Cattle grazing prevents the dense growth of willows, grasses and sedges necessary to control this form of erosion. Right, Cattle and off-highway-vehicles have been excluded from a major section of Antelope Valley Creek. Within the fenced area, the creek is recovering with willows, grasses and sedges being allowed to regrow.



DFG photos by Ron Rogers

areas dominated by sagebrush, bitterbrush and agricultural fields. Obviously, different management tools are needed to make this habitat more hospitable to wintering deer. Much of this land is already owned by DFG and other agencies. With hard work, and by sharing information, research and resources with other agencies, private landowners and concerned citizens groups, these lands can be made more productive to deer and other wildlife. The payoff will be increasing the numbers of deer and their physical condition leaving the winter ranges to produce healthy fawns on the summer range in lush early successional habitat.

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Cattle graze at Antelope Valley Wildlife Area through an agreement with the U.S. Department of Agriculture, U.S. Forest Service, and neighboring private landowners. The area between the cattle and the foreground is a fenced habitat management area designed to arrest errosing in Antelope Creek.