

Mule Deer

Natural History

Mule deer are the most abundant big-game animal in Arizona, with the statewide population estimated at 120,000 post-hunt adults. They can be found in most areas of the state, from sparsely vegetated deserts upward into high, forested mountains. Rocky Mountain mule deer occur primarily in northern Arizona above the Mogollon Rim in game management units 1 through 13, while the so-called desert mule deer is found in all of the more southern units (15 through 46).

The mule deer gets its name from its large ears. Its coat is reddish-brown in summer, turning to a blue-gray or a chocolate brown in winter. The forehead is much darker than the face, while the animal's throat, belly, and inner leg surfaces are white. One of the mule deer's most distinguishing characteristics is a white rump patch and a narrow, black-tipped white tail.

The mule deer is the larger of Arizona's deer species. Adult bucks may weigh more than 200 pounds and stand up to 42 inches tall at the shoulder. Does average 125 pounds.

Mule deer antlers typically branch into two main beams, each of which may fork into two or more tines. The size and number of points is dependent on a combination of the buck's age, nutrition, and genetic background. The antlers develop under a layer of soft skin, called velvet, which supplies them with nutrients. When fully grown, the antlers harden and the now dry velvet is rubbed off. The bony antlers are retained until spring, after the breeding season has passed. Buck deer are polygamous and use their antlers to intimidate other males and drive them away from the does during the winter breeding season.

After a gestation period of about 190 days, the does give birth to one or two spotted fawns. Fawns in northern Arizona are born in late spring, while those in southern Arizona usually arrive in midsummer. A fawn's spots disappear in about two months. The young remain with their mother until the following spring. Both sexes attain maturity in about one year and have a life span of about 10 years.

Research has shown that mule deer population levels are largely determined by the number of fawns that survive to be yearlings. Fawn survival, in turn, is largely determined by climatic events, with wet, mild winters contributing to high fawn survival rates. Dry winters and springs usually result in poor fawn survival, and heavy snows and freezing temperatures occasionally reduce the population levels of both fawn and adult Rocky Mountain mule deer. Another limiting factor for mule deer is predation. In Arizona, the mountain lion is the principal mule deer predator.

Mule deer are primarily browsers, although they feed largely on forbs and new grass growth in the spring and summer. Other major diet items are twigs, bark, buds, leaves, and nuts. Important browse plants include mountain mahogany, cliff rose, sagebrush, and oak in northern Arizona, with jojoba, buck brush, and mountain mahogany being favored in southern Arizona. Most feeding is done at dawn and dusk, although human activity and a full moon may cause a shift to more feeding at night.

Hunt History

As befits Arizona's principal game animal, deer received some protection as early as 1887 when a four-month season of October 1 through January 31 was established by the territorial legislature. Buck-only hunting was instituted in 1893, and the season was gradually reduced until 1913 when the new state legislature authorized a two-month season and a two-buck bag limit. Even this was deemed excessive by the state's sportsmen, and a public initiative in 1916 reduced the limit to one buck deer to be taken during the month of October.

Despite a serious overpopulation of deer on the North Kaibab in the 1920s, deer numbers appeared to decline in the rest of the state. In 1929, the mule deer season was closed south of the Gila River, and even as recently as 1946, fewer than 5,000 mule deer (more than 80 percent of all deer killed) were harvested in Arizona. Then, for reasons that are still unclear, deer populations began to increase. As the populations rose, doe and "any-deer" hunts were authorized. In 1961, an all-time high of 91,120 deer hunters took 35,897 deer. More than 86 percent of these were mule deer and nearly 10,000 were antlerless animals. Archery deer hunting was also now beginning to provide a significant hunting opportunity.

A series of years of poor fawn survival followed. By 1970 fewer than 16,000 deer were taken, and hunt success had fallen to 16 percent. With the institution of permit-only deer hunting the following year, hunter numbers dropped from more than 97,000 to fewer than 68,000. Only about 9,500 mule deer were reported harvested.

Deer permit numbers gradually increased after 1972, leveling off at around 70,000 per year between 1976 and 1982, when hunters took more than 12,000 mule deer, approximately 75 percent of the total deer harvest. Then, a series of wet winters resulted in an increase in fawn survival rates, and hunter numbers and the numbers of deer bagged increased accordingly until 1986, when nearly 86,000 hunters took 25,566 deer, of which 77 percent were mule deer.

Since then, another series of droughts has occurred, and deer hunting opportunity is again being curtailed. In 1998, 44,524 hunters reported taking fewer than 10,500 deer. Of the total deer harvested that year only 60 percent were mule deer. Prospects in the near future are even more discouraging, but mule deer are "boom and bust" animals. With the advent of better than average winter rains, mule deer populations will once again improve. The only question is when.

Management Needs

Research Needs

Mule Deer Operational Approaches

Below are approaches for guiding the management of Arizona Game Species. In all the approaches listed below, annual harvest objectives were derived from past harvest estimates and recent habitat conditions. In all cases, these harvest objectives are well within the range of sustainable harvest.

1. Increase post-hunt population trends statewide (1.A.1-1.A.6).
2. Maintain annual harvest of at least 6,000 (1.B.1-1.B.3, 1.B.6, 1.B.7).
3. Provide recreational opportunity for at least 35,000 (1.B.1-1.B.3).
4. Provide 200,000 hunter days or greater each year (1.B.1-1.B.3).
5. Maintain buck:doe ratios statewide according to hunt guidelines (1.A.1-1.A.6).
6. Manage hunt success statewide according to hunt guidelines (1.A.1-1.A.6, 1.B.1-1.B.3).
7. Use standardized surveys and population and hunt modeling to assist in permit recommendations. Base harvest objectives on population trends and habitat objectives (1.A.1-1.A.2).
8. Issue permits considering hunter access and demand rates for various weapon types (1.B.1-1.B.3, 2.A.1).
9. In Game Management Units managed under Alternative Deer Management, offer buck hunting opportunities that emphasize harvest of older age class animals, reduced hunter densities, and higher hunter success (1.A.1-1.A.6).
10. Improve the condition of declining or low-density herds through habitat improvement, research, conservative hunt management, or predator management (1.A.1-1.A.6, 1.B.1-1.B.3).
11. Maintain existing occupied habitat, with emphasis on retention of medium and high quality habitat and maintain linkages between habitats (1.A.1-6).
12. Coordinate with the Arizona Department of Transportation (ADOT) to maintain or enhance habitat connectivity among deer herds. Also work with ADOT to determine the extent of vehicle-deer collisions and to identify possible mechanisms by which to reduce the incidence or severity of such collisions (1.A.1-1.A.6, 2.D.1-2.D.4).
13. Local Habitat Partnership Committees will identify ways to manage and enhance habitat through partnerships with public agencies, property owners and lessees, and wildlife conservation organizations, and help maintain communication among individuals interested in deer management (1.A.1-1.A.6, 2.D.1-2.D.3).
14. Manage from a landscape perspective (1.A.1-1.A.6).
15. Coordinate with land management agencies, property owners, and lessees to mitigate land uses that are detrimental to mule deer (1.A.1-1.A.6, 2.D.1-2.D.4).
16. Manage and enhance habitats through partnerships with public agencies, property owners and lessees, and wildlife conservation organizations (1.A.1-1.A.6).
17. Continue habitat enhancement projects to benefit mule deer (1.A.1-1.A.6, 2.D.1-2.D.4).

