



Mule Deer
Working Group

Fact Sheet

ANTLERLESS MULE DEER HARVEST Fact Sheet #7

Antlerless harvest of mule deer can be an effective tool for managing population levels. Harvesting females can help maintain sustainable populations and prevent large-scale die-offs or over-utilization of habitat. State and Provincial agencies collect a variety of biological data to help formulate antlerless harvest strategies and quotas to manage mule deer populations and their habitats.



Background

In the early days of wildlife management, protection of female deer and their fawns was fundamental in helping mule deer populations grow throughout most of their range. Mule deer numbers eventually rebounded and antlerless harvest was needed to address declining forage supplies from overuse or agriculture damage. This management tool has been controversial over the years and to this day doe harvest is less socially acceptable than buck harvest with many hunters. However, antlerless harvest can be used to stabilize or decrease mule deer populations depending on the level of harvest and natural mortality occurring within a population.

Any source of mortality can be characterized as being somewhere along the continuum from mostly compensatory to mostly additive mortality. Compensatory hunting mortality is harvest that mostly replaces mortality that would naturally occur in a population. When populations exceed the habitat's carrying capacity, resources become limited, habitat degradation occurs, and animals have poor body condition which decreases adult survival and reproduction. Under these conditions, some of the animals removed by hunting are in excess of the habitat's ability to support them. Although sources of mortality are rarely completely compensatory, most of these animals removed would have died of other causes (like disease and starvation). In populations near carrying capacity, female harvest can result in higher fawn production and survival because remaining deer are in better condition and this can also compensate for harvest mortality.

Additive mortality occurs when deaths are not compensated for by increased reproduction or a reduction in other causes of mortality, it simply results in less deer. This occurs most often when populations are not over carrying capacity and the habitat can support more deer. Harvest mortality must be mostly additive to decrease a given population. Therefore, to reduce a population at or above carrying capacity, doe harvest needs to be set at a level high enough to overcome compensation of mortality.

Using Science to Guide Management

The impact of antlerless harvest on population trend depends on the proportion of adult does harvested and recruitment of fawns into the population. If hunting mortality is partially compensated for by higher fawn recruitment and/or less animals dying later of something else, then doe harvest may need to be increased to reduce the population. The natural mortality rate tends to decrease as harvest increases (compensation) to a certain point, but above that level all other mortality becomes additive.

Studies have shown that environmental factors such as drought, deep snow, and extreme temperatures have the greatest impact on fawn survival. However, these same environmental conditions may have less effect on adult doe survival. Harvest of fawns is more compensatory than other age classes because their survival is naturally much lower than adult deer. Hunting mortality of fawns during an antlerless hunting season is typically much less than adult females because of hunter selectivity.



Photo: Don S. Paul

Because adult does have relatively low rates of natural mortality, harvest of this segment of the population has a greater chance of being additive. Antlerless harvests must be adjusted in relation to adult female survival and fawn recruitment in each population because significant harvest of adult females in areas with low fawn recruitment will result in a more substantial population decline. In fact, in populations with chronically low fawn recruitment and an ample supply of habitat, doe harvest is frequently not necessary.

Not only does the health of adult females have an impact on fawn recruitment, but their age plays a role as well. Populations maintained at densities below the carrying capacity of the habitat through antlerless harvest may have increased fawn recruitment resulting in a younger female age structure. Research has shown that recruitment of fawns is lower in does less than 2 years of age. If harvest is intense enough to significantly decrease the average age of the doe population, fawn recruitment may be reduced.

Putting it into Practice

The additive portion of adult female harvest has the greatest potential to influence population size. However, extensive antlerless harvest does not guarantee that populations will decline because mortality can be completely replaced by fawn recruitment. Population trajectory depends on the balance between additions to (fawn recruitment) and subtractions from (mortality) the population. Managers constantly use adaptive management principles to determine the appropriate level of female removal needed to properly adjust the population level.



Concern has been raised among sportsmen regarding perceived higher mortality of orphaned fawns associated with antlerless harvest. Research indicates that fall doe hunts have no detrimental effects on survival or development of orphaned fawns at that time. In fact, most antlerless hunting seasons are structured to occur well after the fawns are weaned and self-sufficient. Removing an adult female can actually provide more habitat for the remaining deer, including the current year's fawns.

Antlerless harvest is an important tool to help managers control deer population levels. In addition, doe hunting serves as a valuable opportunity to get hunters afield, especially youth. There are numerous techniques accepted and used by managers that yield reliable data for establishing harvest rates and monitoring mule deer abundance. These data provide essential information to determine if doe harvest is necessary and to select the appropriate harvest rate for a particular herd or management unit.

More information on mule deer can be found at www.muledeerworkinggroup.com