

2012 Kootenay-Boundary Mule Deer Management Plan: Outline and Background Information

The Ministry of Forests, Lands and Natural Resource Operations is currently developing a mule deer management plan for the Kootenay-Boundary Region to provide short and long term direction in population management. Because very limited antlerless hunting occurs in the Kootenay-Boundary, the plan will be primarily focused on management of bucks. To determine the best management direction for areas throughout the region, we are working with wildlife clubs, guide-outfitters, First Nations and BCWF to undertake the following steps:



1. Delineate **Population Management Units (PMUs)**, which are broad areas where populations and management objectives are relatively consistent.
2. Identify **Objectives** for mule deer population management.
3. Determine the **Importance** of each objective in each PMU.
4. Identify **Management Alternatives**, which are broad options for management direction that could be applied to a PMU (for example, managing for high buck ratios or maximum hunting opportunity).
5. Develop a **Consequence Table** to assess how well each management alternative addresses each management objective (a consequence table weighs the costs and benefits of different management alternatives given stated objectives).
6. Determine the **Preliminary Best Management Alternative** for each PMU, by using the Consequence Table and the importance of different objectives (i.e., priority rankings).
7. Develop specific **Hunting Regulation** proposals in accordance with the selected management alternative, and to meet objectives of regulation simplicity, harmonization within and among regions, increased hunting opportunity and reduced management costs.

Background Information:

The following information is provided as a background on mule deer management in the Kootenay/Boundary and outlines some factors that could be limiting mule deer populations.

1. Summary of past hunting regulations

From the late 1980s through to 1997 the Boundary had a long 51 day any buck season as well as an early 4-point season in MU 8-15. From 1997 to 2010 the any buck season was reduced to 20 days in October with 20 days of 4-point in September and 10 days of 4-point in late October. In 2010, as part of the changes to the mule deer seasons across the Southern Interior, the any buck season in the Boundary

was extended by 10 days to the end of October replacing the former late 4-point season. In addition, limited antlerless permits have been available through LEH for a 21 day period in October. The East and West Kootenay sub-regions had long any-buck seasons up until the 1990s. Antlerless mule deer permits were also available in the 1990s with seasons starting on October 10, and running to November 30 or December 10. Antlerless seasons were closed in 1997. This change was intended to increase mule deer population size in response to concerns about declines in the 1990s. Buck seasons became more restrictive (shorter seasons and 4-point seasons) in the late 1990s and 2000s to try and increase buck numbers. In 2010, an October any-buck season was implemented across the Southern Interior of B.C., along with 4-point seasons in September and November.

2. Status of Mule Deer Populations

Mule deer have gone through major changes in abundance since the arrival of European settlers. During the period of settlement in the later 1800's mule deer were not abundant. Their numbers increased through the 1900's to a peak in the 1960's then declined, beginning in the mid 1960's, and have never recovered to those former numbers (Hatter et al. 1989).

Limited information exists on mule deer population size in the Kootenay-Boundary; however harvest trends suggest higher mule deer populations in the 1980s and the early-1990s relative to current numbers (Figure 1).

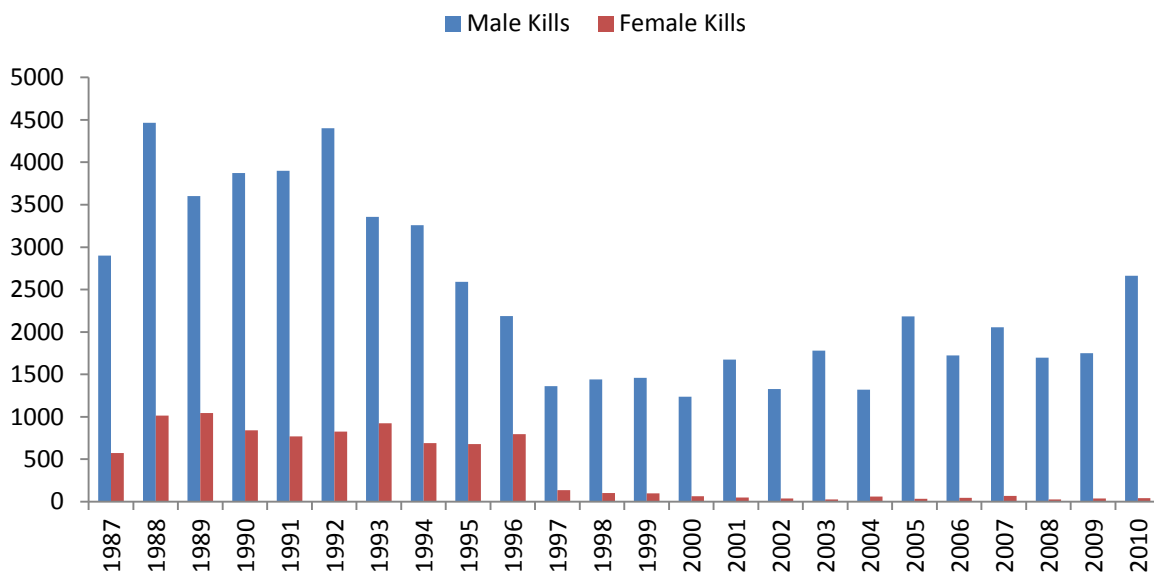


Figure 1: Mule deer harvest in the Kootenay-Boundary, 1987-2010. Data are from the BC Hunter Sample.

A substantial die-off of mule deer (and other ungulates) occurred during a severe winter in 1996/97 (Figure 1). Although white-tailed deer and elk appear to have recovered or surpassed pre-1996 numbers, mule deer populations likely levelled off at lower numbers and may have declined further in some areas. Population growth of mule deer is largely driven by female survival rate and recruitment of fawns to breeding age. Factors influencing survival of mule deer include predation rates, climatic conditions, population size relative to available forage, habitat condition and competition.

3. Effect of buck-only hunting on mule deer populations

Post-hunt composition surveys conducted over the past 3 years have shown buck ratios above management targets (20 bucks:100 does) in the Fernie, Nelson and Kettle Game Management Zones (GMZs), while buck ratios were well below management targets in the Cranbrook GMZ in 2010 and 2011.

Currently antlerless hunting is limited to 3 MUs in the Boundary (8-12, 8-14 and 8-15). Hunters have raised concerns that the any-buck season is hindering population growth of mule deer; however it is important to recognize that hunting bucks only will not affect recruitment. After reviewing research from across western North America, Erickson et al. (2003) concluded that:

“Although buck-only harvest may alter buck:doe ratios and age structure of the male segment of the populations, it does not reduce the reproductive potential of the population because the same number of does are still bred by remaining bucks. Hunters sometimes blame declines in the number of fawns per does on a scarcity of bucks or a lack of mature bucks available to do the breeding. However, research has failed to support a biologically meaningful relationship; the number of bucks per 100 does is unrelated to fawn recruitment the following year.”

The 4-point or greater antler point restriction has been used in southern B.C. to limit harvest at times when mule deer bucks are most vulnerable. This regulation is not typically used unless there is risk of overharvest as the regulation limits hunting opportunity and can lead to increased hunting pressure on prime bucks. Research has shown that although antler point regulations can increase buck ratios, they fail to produce larger bucks and/or more deer.

4. Habitat

The landscape of the Kootenay Region has changed dramatically over the last century. The amount of early seral forest (1-80 years) has decreased in interior B.C. since 1957 while the amount of forest >80 years old has increased. This increase in the amount of mid-seral forest coincided with large-scale commercial forestry and can be attributed to the aging of forest that burned or was cut before 1957 and, the onset of professional firefighting which has reduced the recruitment of early forest. The amount of non-forested land such as grasslands, meadows, and early seral burns is likely much less than historically (Braumandl et al. 1994). Forage quality and quantity is generally higher early seral habitats than mid to late stands, making them more favourable to mule deer (Wakeling and Bender 2003). Overall, habitat change trends observed over the past 5 decades have likely reduced the availability of high quality habitat for mule deer.

Nutritional value of forage is low in the winter and mule deer are unable to meet energy demands during this period. Although improvement of winter habitat may improve survival of deer by reducing predation risk and starvation rates, an equally important consideration is the quality of summer and autumn habitat as this will influence the body condition of mule deer prior to winter. Research has shown enhanced nutrition in the summer and autumn increased fawn growth and survival rates and increased pregnancy and twinning rates of does in Washington (Tollefson et al. 2010). Several East Kootenay MUs have shown low fawn recruitment in the late fall (Stent and Szkorupa 2011), which could be attributed to declining quality of summer and autumn habitats.

5. Effect of predation on mule deer populations

Cougars, coyotes, bears and wolves are important predators of mule deer. The degree to which predators limit mule deer populations in the Kootenays is largely unknown; however research in the West Kootenay suggested high cougar numbers limited mule deer population growth in the late 1990's. Mule deer can also experience higher mortality rates than white-tailed deer during periods of high cougar abundance (Robinson et al. 2002). Cougar numbers can be maintained at high levels if white-tailed deer are abundant, resulting in sustained predation on remaining mule deer.

The number of problem cougars killed in the Kootenay Region each year is monitored by the ministry and used as an overall index of cougar abundance. This index showed periods of high cougar abundance in the late 1990's, which coincided with anecdotal reports. Currently the index suggests cougar numbers have increased in the late 2000s and are now relatively high.

Research in southeast Idaho has shown limited effectiveness of predator control treatments to increase mule deer population size (Hurley et al. 2010). When mule deer populations are at or near carrying capacity, mortality from predation is typically replaced by other natural mortality factors.

6. Competition with other ungulates

Generally, elk and white-tailed deer numbers have increased across western North America over the past 30 years while some mule deer populations declined and others increased. Spatial overlap of these species occurs in many parts of the Kootenay-Boundary Region and dietary overlap occurs at certain times of the year. Fire suppression and succession of once early and mid-seral habitats to forests are thought to favour elk over mule deer (Keegan and Wakeling 2003). The question of how competition is limiting one species over the other is difficult to study and requires analysis of a number of habitat and physiological variables in both species (Schoener 1983). Competition between elk and deer has been studied in the United States but studies have yet to show reduced survival or population growth of mule deer populations competing with elk.

For more detailed information on mule deer see:

Kootenay Region mule deer frequently asked questions:

http://www.env.gov.bc.ca/fw/wildlife/management-issues/docs/kootenay_mule_deer_faq.pdf

Mule Deer Working Group

<http://muledeerworkinggroup.com/>

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