



**Montana Fish,
Wildlife & Parks**

FALL ELK DISTRIBUTION IN THE MISSOURI RIVER BREAKS



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Montana Fish, Wildlife and Parks
1420 East 6th Avenue
PO Box 200701
Helena, MT 59620

For additional information, please
contact:
Scott Thompson
406-228-3710

Montana Fish, Wildlife and Parks and the U.S. Fish and Wildlife Service, Charles M. Russell National Wildlife Refuge recently partnered on a study that focused on elk distribution in the Missouri River Breaks area north of the Missouri River in hunting districts 621, 622 and 631. Elk numbers in this area have been above the established elk population objective of 1,700-2,000 animals since 2001 (Figure 1). Wildlife management generally relies on increasing harvest of adult female elk as the primary management tool for curtailing elk population growth and reducing elk populations. However, increased hunting license quotas in this area have not resulted in sufficient harvest to reduce elk population numbers. Since the number of elk hunting licenses issued was increased in 2007, harvest success rates have declined (Figure 1). Hunter access restrictions on and through private land is thought to be a limiting factor in elk management in this area. The purpose of this project was to evaluate the effects of public hunting access and other landscape factors on elk distributions during the fall archery and rifle hunting seasons.

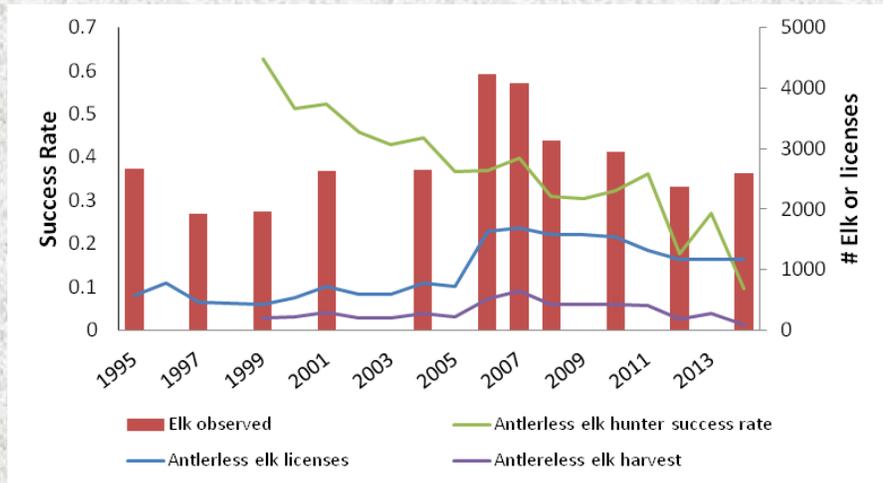
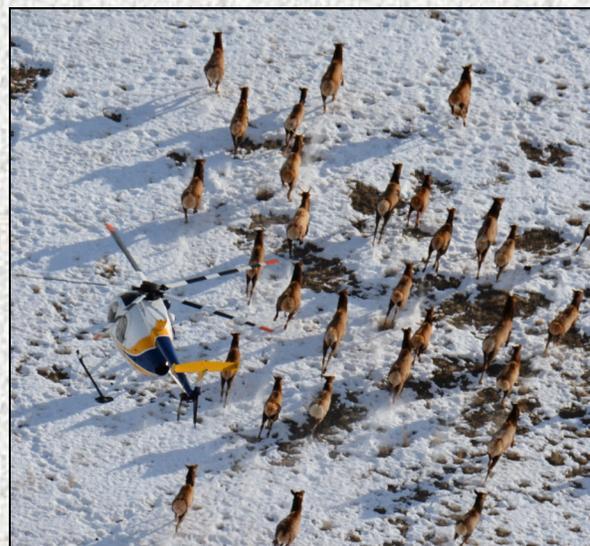


Figure 1. The number of elk observed during aerial surveys, antlerless elk hunting licenses, antlerless elk harvest, and hunter success in HDs 621, 622, 631, and 632 during 1995–2014.

We captured 25 cow elk in the Missouri River Breaks (MRB) population in hunting district (HD) 621 and 25 cow elk in the Larb Hills population in HD 622/631 by helicopter netgunning in February 2013 (Figure 2). We collected a blood sample to determine pregnancy status and screened blood serum to detect antibodies indicating exposure to diseases. None of the sampled elk were positive for exposure to brucellosis. We found some elk were exposed to *Leptospira*, para-influenza 3, and infectious bovine rhinotracheitis, and levels of exposure were within the range commonly observed in other wild elk populations. The average pregnancy rate was 77%, which is lower than pregnancy rates from typically observed in other Montana elk populations.

We outfitted elk with global positioning system (GPS) radiocollars that were built with a release mechanism timed to release the collar after 2-years. We programmed collars to record hourly locations 24 hours a day and to emit a distinct mortality signal if the collar was stationary for more than 6 hours. We



monitored elk survival and locations monthly for two-years using aerial and ground telemetry. Hunters were also asked to return collars from harvested elk. We used these locations to estimate elk survival rates, determine causes of mortality, and to define elk seasonal distribution and public and private land use patterns.

Of the 50 collars deployed, 1 collar released early and 2 collars malfunctioned. Of the remaining 47 collared elk, 40 survived the first year of monitoring and 32 survived the full two-year monitoring period. The annual survival rate for MRB elk was 0.84 (95% CI = 0.69 – 0.92) and for Larb Hills was 0.83 (95% CI = 0.68 – 0.91). Hunter harvest was the primary cause of mortality. Of the 15 documented mortalities, causes included 1 archery harvest, 8 rifle harvest, 1 illegal harvest, 2 wounding loss, 1 lion predation, and 2 unknown causes. Of the 9 elk legally harvested, 8 were harvested in areas accessible to public hunters and 1 was harvested on private land that did not allow public hunter access. Hunters were known to avoid harvesting collared elk, so mortality caused by hunting may be slightly higher for the two herd units.

We categorized hunter access across the study area into 3 categories: freely accessible to hunters, restricted hunter access, and no public hunter access. The elk population range in the MRB during archery and rifle seasons was 97% accessible to hunters. A total of 2% of the elk range allowed no public hunter access and 1% restricted hunter access. Sixty-eight percent of all archery season elk locations occurred in areas accessible to hunters, 30% occurred in areas with no hunter access, and 2% occurred in areas with restricted hunter access. During rifle season, 91% of all elk locations occurred in areas accessible to hunters, 9% occurred in areas with no hunter access, and <1% occurred in areas with restricted hunter access.

In the Larb Hills, the elk range during archery season was 79% accessible to hunters, 11% allowed no hunter access, and 10% restricted hunter access. Fifty percent of all archery season elk locations occurred in areas accessible to hunters, 40% occurred in areas with no hunter access, and 10% occurred in areas with restricted hunter access. The rifle season elk population range was 79% accessible to hunters, 10% allowed no hunter access, and 11% restricted hunter access. Sixty-six percent of all rifle season elk locations occurred in areas accessible to hunters, 29% occurred in areas with no hunter access, and 5% occurred in areas with restricted hunter access.

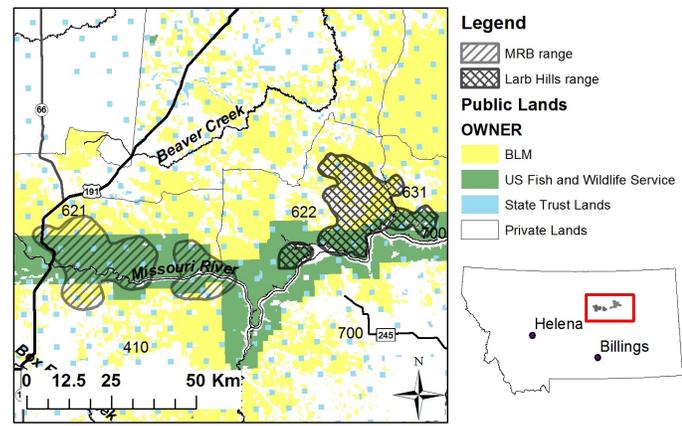


Figure 2. The study area included the Missouri River Breaks in hunting district (HD) 621 and Larb Hills-Iron Stake Ridge areas in HD 622/631 in south Philips County. Landownership included a mixture of privately owned lands (white), and public lands owned by the Bureau of Land Management (BLM, yellow), U. S. Fish and Wildlife Service (green), and State of Montana (blue).

Understanding the availability of elk, primarily antlerless elk, to hunters is vital to managing elk to population objectives while still providing hunting opportunity for elk on publicly accessible lands. We found that even relatively small geographic areas within an elk population range being managed for restricted hunter access or no hunter access may have a disproportionate affect on elk distribution and prevent effective harvest of female elk to maintain elk populations at objective levels. Our results showed that the majority of the female elk harvest occurred during the rifle season, and the majority of MRB elk spend the rifle hunting season in areas that are accessible to hunters. With a limited amount of areas with no hunter access or restricted hunter access within the hunting season ranges, MRB elk used dense cover, riparian areas and areas away from roads for security. In the Larb Hills, elk are less accessible to hunters during the rifle hunting season, with elk more commonly using no access areas rather than habitat features for security. This situation will limit the effectiveness of antlerless harvest as a tool for reducing population size towards objective levels. In this area, stakeholders may need to determine if they are willing to tolerate a larger elk population, more liberal hunting seasons resulting in higher hunter numbers or longer season length, or provide some level of hunter access to harvest cow elk so the population can be reduced to objective levels. Working cooperatively with stakeholders to provide adequate hunter access and implementing harvest strategies to achieve elk population objectives is needed for effective elk management in this area and other areas of the state. One step in that direction is the recently adopted “shoulder seasons” for many hunting districts in an effort to reduce elk populations. The ultimate goal is to maintain distribution of elk across public and private land, respect land-owner concerns, and provide equitable availability of wildlife resources for all Montanan’s.

