Northern Rocky Mountain Science Center
U.S. Department of the Interior
Geological Survey

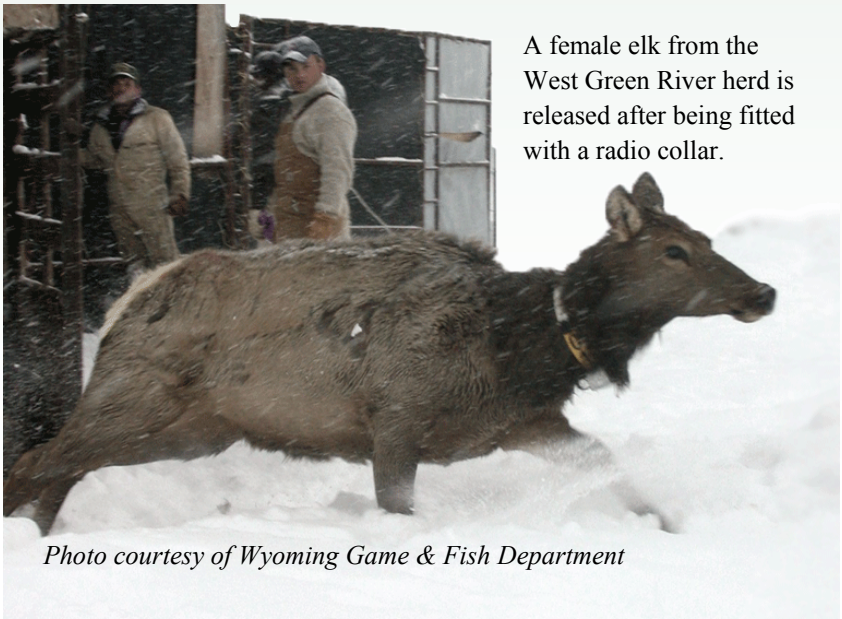
Elk on the Landscape:

Investigating the influence of land management practices on elk spatial ecology

Background

Research lead by the U.S. Geological Survey's Northern Rocky Mountain Science Center focuses on the movement and distribution of elk that depend on the sagebrush steppe plant communities of southwest Wyoming for critical winter habitat. Long-term research began in 2005 to address concerns of the National Park Service and Wyoming Game and Fish Department regarding potential resource degradation resulting from a growing elk herd and associated increased use of Fossil Butte National Monument.

The West Green River Elk herd is regionally significant because it is one of the few herds in Wyoming that does not receive supplemental winter feed and is free of brucellosis. The State of Wyoming manages this herd by regulating the timing, location, and extent of hunting. This may indirectly impact the vegetation on which elk depend by influencing their abundance and seasonal distribution.



A female elk from the West Green River herd is released after being fitted with a radio collar.

Photo courtesy of Wyoming Game & Fish Department

Federal land management practices such as grazing, prescribed fire, and sagebrush control are often designed to alter habitat conditions and may influence available forage. Understanding how elk utilize these high elevation, sagebrush steppe communities will aid state biologists' efforts to meet herd management objectives while simultaneously protecting federally managed resources.

Collaborative research with the National Park Service, Bureau of Land Management, US Fish and Wildlife Service, US Forest Service, and Wyoming Game and Fish Department seeks to identify the influence of land management practices on the distribution and movement patterns of this segment of the West Green River Herd.

Current Research

Over 70 elk have been radiocollared on Fossil Butte National Monument and neighboring Bureau of Land Management lands near Cokeville, Wyoming, since 2005. The collars allow the elks' movement to be tracked via GPS systems. Collars are equipped with a prescheduled release mechanism and a VHS beacon that allows scientists to track and collect the collars after they fall off the animal. Collars remained on each animal for three years and thus far have produced nearly 210,000 locations documenting elk use (Figure 2).

For more information contact:
Ed Olexa, Wildlife Biologist
Phone: 406-994-6269
Email: eolexa@usgs.gov

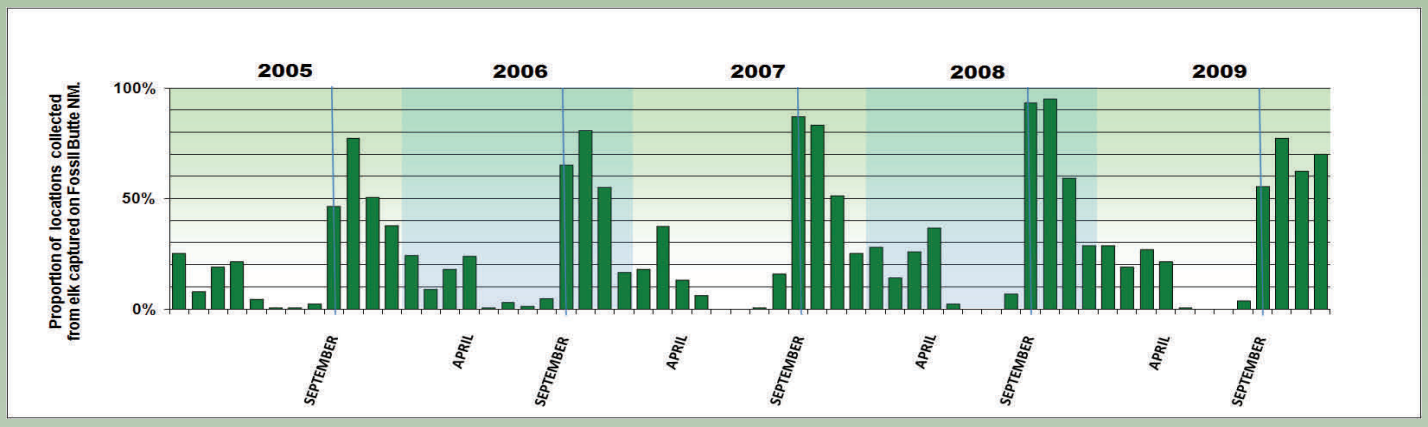
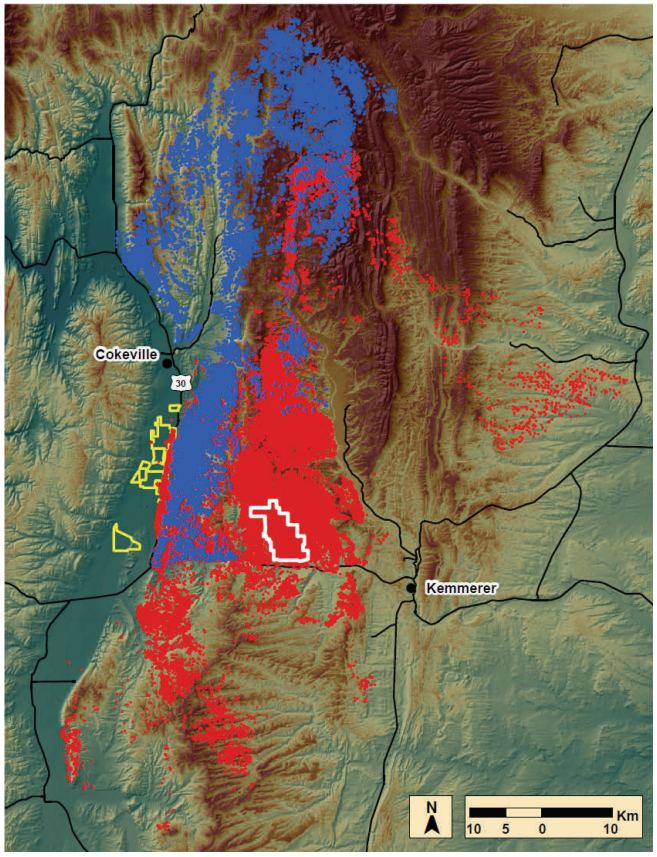


Figure 1. Timing of elk movement onto and off of the Fossil Butte National Monument.

Understanding the timing of elk movements is as equally important as knowing where they move. This is especially true for Fossil Butte National Monument. High elk use may have a significant impact on vegetation. While cattle grazing on the Monument was discontinued in 1989, land managers remain concerned about the impact of high densities of overwintering elk. Figure 1 shows when elk move onto and off of the Monument. NOROCK researchers found that the timing of elk movement appears linked to the hunting season. Elk move onto the Monument in the fall when archery hunting begins and move off of the Monument in the spring.



The West Green River elk herd migrates over great distances throughout the year. Fossil Butte National Monument, outlined in white, is a geographically small but ecologically important portion of the herd's annual range. The red dots represent recorded movement of elk collared on the Monument. The blue dots represent recorded movement of elk collared on BLM managed lands near Cokeville, Wyoming. Land managers thought elk that foraged in the Cokeville Meadows Wildlife Refuge, outlined in yellow, were part of the herd segment that winters near Cokeville. This research suggests that these elk do not migrate and forage in the Wildlife Refuge. Their western movement may be restricted by transportation corridors.

Figure 2. Red and blue dots represent 209,000 locations documenting elk use on and near Fossil Butte National Monument.

The Northern Rocky Mountain Science Center is located in Bozeman, Montana and includes three field stations in Montana and one duty station in Wyoming. For more information on NOROCK's research, please visit http://nrmsc.usgs.gov or contact the Center Director: Jeff Kershner 406-994-5304 or jkershner@usgs.gov