



Wyoming Landscape Conservation Initiative

"Conserving world-class wildlife resources. Facilitating responsible development."



Observations of Elk Movement Patterns on Fossil Butte National Monument

People from all over the world visit Fossil Butte National Monument (referred to in this report as "the Monument") for its famous Eocene Green River Formation. Fossilized fish, birds, plants, and mammals tell the story of a time when Wyoming was warmer, wetter, and sub-tropical. The present day inhabitants—birds, reptiles, mammals, and plants—are remarkably different from the fossilized remains of life forms that lived in southwest Wyoming 52 million years ago. While most visitors come to the Monument in the summer to see the fossils, those who visit during the fall and winter months might have a better chance to catch a glimpse of the small sub-population of the West Green River elk (*Cervus elaphus*) herd that inhabits the area.

Elk, the second largest member of the deer family (Cervidae) in North America, historically ranged from the Pacific to Atlantic coasts and from Mexico to northern Alberta. Elk are now found mostly in the western United States and southwestern Canada. Elk are thriving in many areas of Wyoming and elsewhere in the west, largely due to their generalist feeding habits, ability to adapt to a broad range of conditions, and high reproduction rates.

The West Green River elk herd is one of the few of western Wyoming's 17 herds that does not receive supplemental winter feed. The population of this herd has not fluctuated as dramatically as other herds in the area. In fact, the 2013 post-hunt population estimate was approximately 4,000 elk, well above management population objectives set by the State of Wyoming. In addition, the herd does not have brucellosis, a bacterial disease that affects bison, cattle, and cervids (including elk and deer) and can cause pregnant females to suddenly abort. In the United States, brucellosis is primarily found in free-ranging wildlife in the Greater Yellowstone Area, including northwest

Wyoming and portions of neighboring states. The disease is of great concern to livestock producers and land managers due to the fear that it can be transferred from infected elk and bison to uninfected free-ranging elk, bison, and domestic cattle.

While the West Green River elk herd has a broad annual range, home range size and distribution of the subpopulations varies (fig. 1). The small subpopulation that frequents the Monument has access to a variety of private, State, and Federal lands within close proximity to the Monument. These lands are managed differently for various uses (including hunting, grazing, and recreation) which can create challenging wildlife-management issues.

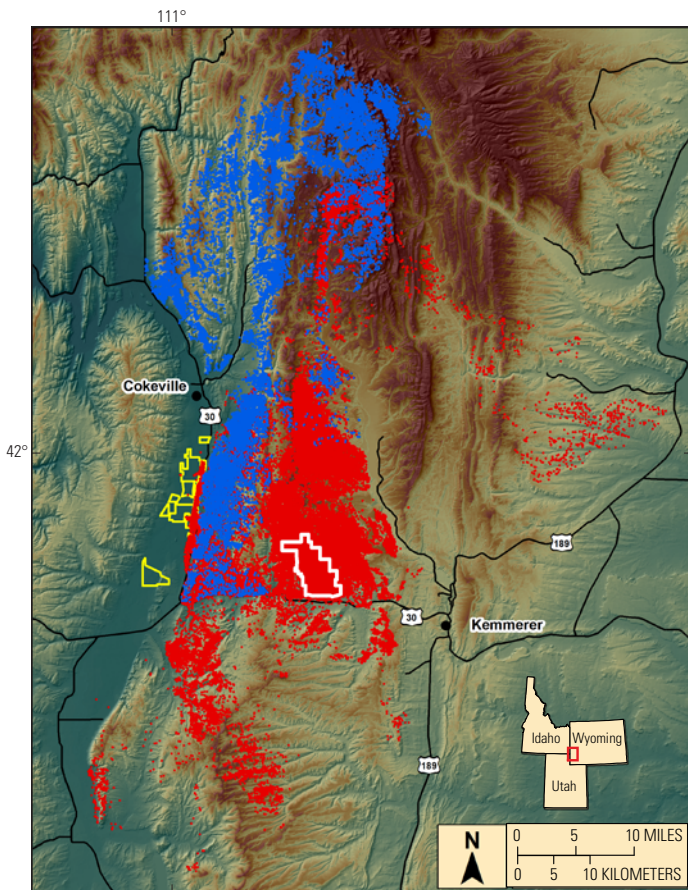


Figure 1. Red and blue dots represent 209,000 locations, recorded by radio collars, documenting elk use on and near Fossil Butte National Monument. Each collared elk contributed up to five locations per day.

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 lands managed by the Bureau of Land Management near Cokeville, Wyoming. Land managers had thought that 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.

Prepared in cooperation with the



The WLCI is a long-term, science-based program to assess and enhance aquatic and terrestrial habitats at the landscape scale in southern Wyoming, while facilitating responsible development through local collaboration and partnerships.



Elk on the Landscape

Biologists from the U.S. Geological Survey (USGS) studied this subpopulation of the West Green River Herd to discover what influenced the herd's movement patterns. Researchers, in cooperation with the Wyoming Game and Fish Department and other Federal agencies (including the Bureau of Land Management, Forest Service, and Fish and Wildlife Service) tracked 40 elk from January 2005 through December 2008 and collected location information. The USGS found that the local subpopulation of the West Green River Elk ranged over nearly 732,000 acres, an area roughly the size of Rhode Island. Documented locations ranged as far as 30 miles (mi) north of the Monument during the summer to over 25 mi south of the Monument during the winter. Over 25 percent of recorded elk locations occurred within the Monument boundaries, indicating that the Monument's 8,200 acres serve as a vital component of the annual range.

The USGS scientists found that this subgroup of the West Green River Herd preferentially used the Monument, where hunting is not allowed, during the hunting season. During the hunting season, collared elk were nearly twice as likely to be on the Monument during the daytime versus nighttime. During the rest of the year, collared elk were slightly more likely to be on the Monument during the nighttime versus daytime. When researchers looked at nighttime locations only, they found



A female elk leaves a chute after being radio collared for research and monitoring purposes in Fossil Butte National Monument. Image courtesy of Fossil Butte National Monument.

collared elk were 12 times more likely to be on the Monument during hunting season than during rest of the year. Examining daytime locations only, researchers found collared elk were 23 times more likely to be on the Monument during hunting season than they were during the rest of the year.

The USGS study highlights the importance of the Monument to the West Green River Herd's annual distribution. Though results support the idea that the Monument provides a refuge to a portion of the herd during hunting season, more research is needed to make direct correlations between elk movement and various land-use practices in and around the Monument. In the meantime, fall and winter visitors to the Monument can enjoy the presence of an active elk herd on this landscape.

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—Edward M. Olexa, Suzanna C. Soileau, and Leslie A. Allen



Fossil Butte National Monument, located in southwest Wyoming, is home of some of the world's best preserved Eocene fossils. Image courtesy of Fossil Butte National Monument.

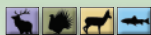
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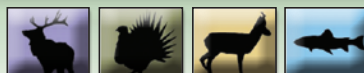


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Partnerships

The WLCI partnership formally includes the Bureau of Land Management, U.S. Fish and Wildlife Service, U.S. Geological Survey, U.S. Forest Service, Natural Resources Conservation Service, National Park Service, Wyoming Department of Agriculture, Wyoming Game and Fish Department, local conservation districts, and local county commissions. Additional groups and individuals participate as well.



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