Ecology of Reintroduced Elk in National Parks

Elk were extirpated from the Black Hills of South Dakota and Badlands of North Dakota during the late 1800s. Herds that now inhabit Wind Cave (WICA) and Theodore Roosevelt National Parks (THRO) are descended from animals reintroduced by the National Park Service (NPS) in 1912 (WICA) and 1985 (THRO).

Prior to 2002, the NPS regulated both populations by translocating elk when numbers exceeded management objectives. This strategy prevented undesirable effects on park resources, limited depredations, and facilitated efforts to reestablish elk in other parts of their native range; however, growing concerns about chronic wasting disease led to the suspension of translocations in 2002. Elk numbers have increased rapidly as a result.

Ungulate management is among the most contentious issues facing the NPS and is especially controversial at THRO and WICA, where elk were reintroduced. The elk are popular with the public; however, high densities may have adverse effects on vegetation, other wildlife, and neighboring landowners. Scientists at Northern Prairie Wildlife Research Center are working with NPS biologists to identify and address information needs for elk management at THRO and WICA. Other cooperators include the U.S. Forest Service, North Dakota Game and Fish Department, and Rocky Mountain Elk Foundation.

Fig. 1—Reintroduced elk at Theodore Roosevelt National Park.

Research objectives

Our elk research focuses on 3 principal areas of interest:

- *Population dynamics*—Estimating vital rates; developing predictive population models.
- *Distributions and movements*—Mapping seasonal distributions of elk activity; identifying areas and stakeholders that are most susceptible to effects of elk; identifying influences on elk distribution.
- *Population assessment*—Developing and evaluating practical methods for estimating elk numbers.

Ultimately, information resulting from this research will guide the development, implementation, and monitoring of management prescriptions by the NPS.

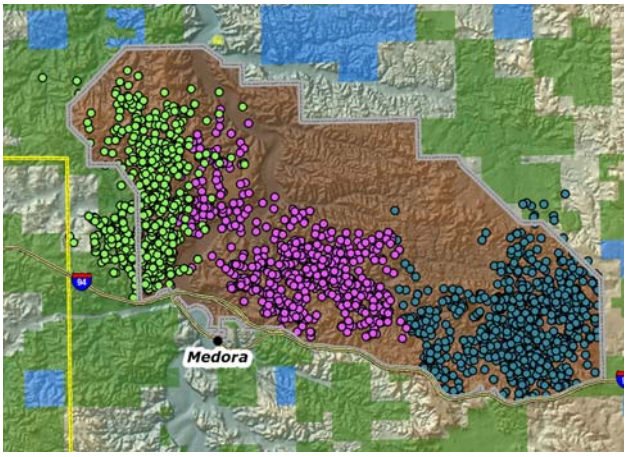

Fig. 2—Sample relocations of 3 female elk at THRO.

Project status

Studies of elk movement and distribution are ongoing at both THRO and WICA, where GPS collars have been used to relocate ~250 elk >400,000 times (e.g., Fig. 2). Preliminary results are providing support for Environmental Impact Statements on Elk Management. We expect the data to provide a basis for the development of predictive models and future work on methods for relating wildlife distributions to landscape features.

Work on population dynamics has occurred principally at THRO in 2000 and has produced the most comprehensive estimates of vital rates for any newly established elk population. In 2006, we used the estimates to develop a population model that explained 99.8% of variation in historic population estimates. We anticipate continued monitoring of vital rates and future work using our model as a basis for risk assessment and management planning.

Reliable population estimates are a prerequisite for efficient management of both parks. Pilot data collected at THRO are providing preliminary insights about survey methodology and detection rates.

For information, contact Dr. Glen Sargeant, Team Leader (glen_sargeant@usgs.gov; 701-253-5528), Northern Prairie Wildlife Research Center, 8711 37th St. SE, Jamestown, ND 58401