



Research for Informed Ungulate Management

Forest Service research provides information to assist land managers in making sound management decisions about deer, elk, and cattle in relation to economic, social, political, and ecological issues.

BACKGROUND

Ungulate management is a challenging balance between protecting the species and their habitats and conserving and managing other natural resources. Elk, deer, and cattle are widely distributed in the continental US and have million-dollar impacts on recreation, agriculture, and natural resource management. Resource managers and policymakers need science-based information about how elk and deer respond to management activities and other land uses, such as fuels management, timber harvest, traffic, and livestock grazing. They also need information about the ways in which ungulates influence plant communities. Forest Service provides research findings to land managers across variety of landscapes to inform sound management decisions about issues such as forage improvements, access management, and mitigation of forest browsing by ungulates. Beneficiaries of the research include federal land management agencies, state lands departments and wildlife agencies, private landowners, and tribes.



PHOTO CREDIT: RACHEL COOK

Forest Service research on ungulates such as elk, deer, and cattle examines how these species impact vegetation structure and composition; how to predict their presence in space and time; and how ungulates respond to human activities such as recreation, management, or development.



PHOTO CREDIT: MARIO OLIVOS

HIGHLIGHTED RESEARCH

Evaluating effects of ungulates on vegetation –

Conducting long-term research across a variety of plant communities at multiple scales to understand how ungulates, both wild and domestic, impact ecological processes and vegetation structure and composition.

In a 60 year-old deer exclusion plot in forests of the Allegheny region of Pennsylvania, Forest Service scientists evaluated impacts of chronic over-browsing by deer on diversity and abundance of understory plants. Research results showed that browsing has caused 60-80% regional declines in herb and shrub richness and a 55-100% decline in density of four key tree species.

Forest Service scientists at the Starkey Experimental Forest & Range in northeastern Oregon evaluated interactions of browsing on key woody species by deer, elk, and cattle with fuels reduction. Densities of aspen, cottonwood, and willow were 3-5 times higher in fuels-treated sites excluded from ungulate browsing versus sites subjected to ungulate herbivory.

New research at the Starkey Experimental Forest & Range will examine the effects of cattle versus deer and elk on riparian restoration for salmonids. The research will use exclosures to monitor grazing impacts on thousands of newly planted shrub seedlings.

A new Forest Service study is investigating deer and plant community interactions at multiple scales, specifically the relationship between deer densities and browsing impacts on vegetation. This information will lead to development of innovative management practices in which foresters can work proactively to manipulate forest landscapes to mitigate the impacts of deer browsing, rather than react to high deer populations through culling programs or expensive fencing solutions.

MORE INFORMATION:

For more information, visit the website: <http://l.usa.gov/YYgQ1h> or contact Monica Tomosy, Wildlife Research National Program Lead, mstomosy@fs.fed.us.



HIGHLIGHTED RESEARCH CONTINUED:

Understanding ungulate movements and distributions in space and time –

Developing models and other tools to predict where elk, deer, and cattle occur given current conditions or those resulting from planned management activities or climate change.

Forest Service scientists have developed seasonal habitat selection models for cattle, deer, and elk on shared ranges. Results showed strong separation between elk and mule deer, with evidence that mule deer avoid elk, and that competition for forage between elk and cattle is likely in late summer. These findings have been used to better manage distributions of livestock in relation to the habitat requirements of deer and elk.

The scientists developed new elk habitat models that predict occurrence of elk during the summer in the Pacific Northwest and incorporate a spatially explicit nutrition component. These models allow landowners and public land managers to strategically manage elk habitat for forest plan revisions and other resource management plans.



PHOTO CREDIT: FOREST SERVICE

Scientists are studying the relationship between deer densities and browsing impacts on vegetation.



PHOTO CREDIT: FOREST SERVICE

The Starkey Experimental Forest & Range located in Oregon, provides scientists a unique opportunity to study deer, elk, and cattle response to intensely managed National Forests within a controlled research setting.

Predicting responses of ungulates to human activities –

Investigating effects of human activities on ungulate habitats and animal performance at landscape scales commensurate with restoration and land use planning. Activities range from traditional management activities (e.g., timber harvest, road construction) and energy development to recreational uses such as hiking, off-road vehicle use, and hunting.

Forest Service Scientists are cooperators in the Kinzua Quality Deer Cooperative, a multi-partner effort with sportsmen and sportswomen to use improved hunter access and success as forest management “tools” to improve the quality of local deer herds and their habitats.

Long-term research on deer and elk response to roads and traffic demonstrated consistent avoidance of roads by elk, but mixed responses by deer, which appear to be avoiding elk. This information is now used by federal agencies to manage road access in relation to deer and elk.

Timber production studies at the Starkey Experimental Forest & Range found that timber harvest had little or no negative effect on deer and elk survival as long as road access was managed.



Researchers updated elk nutrition and habitat selection models with an innovative approach that incorporates the latest research on elk nutrition and current spatial data for summer ranges in eastern and western Oregon and Washington.