

# Modeling study identifies characteristics of high elk-use areas in western Oregon, Washington

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A cow elk is shown participating in a grazing trial in the Northwest. Credit: Rachel Cook

The availability of highly nutritious forage is one of four factors linked to the presence of elk populations in western Oregon and Washington, according to a modeling study recently completed by scientists from the U.S. Forest Service's Pacific Northwest (PNW) Research Station. Findings from the two-year study will be used to update land management planning for the ecologically and economically important ungulate in the region.

"[Habitat](#) models like the one we developed are critical to managing [elk](#)

populations, particularly since current management practices are based on decades-old research and are in the process of being updated to reflect new science," said Mary Rowland, a wildlife biologist at the station's La Grande Forestry and Range Sciences Laboratory and one of the study's principal investigators. "Findings from our modeling go a long way in explaining where in western Oregon and Washington elk populations are most likely to thrive."

Rowland and colleagues used a nutrition model based on elk grazing trials that predicts dietary digestible energy (DDE), a variable that represents nutrition levels based on plant community types. The model was developed by John and Rachel Cook, biologists with the National Council for Air and Stream Improvement, and measures DDE during the summer—a crucial time for elk that ultimately impacts their survival and reproduction rates. The model can also be used to generate maps depicting areas of the landscape that offer the greatest nutritional resources and the effects of forest management on nutrition levels.

The scientists then used DDE predictions in combination with over 50 additional model variables to investigate actual patterns of elk habitat use in western Oregon and Washington. By using radiotelemetry locations of elk, primarily from tribal sources, from five years across three study areas, Rowland and her colleagues identified four variables that consistently provided the most support for observed habitat selection patterns of elk—DDE, distance to roads open to public access, percent slope, and distance to cover-forage edge. The new elk habitat model was then validated by comparing its output to radiotelemetry observations from five additional study sites.

"Our results were extremely encouraging, with close matches seen between predicted elk use from the model and locations of elk in the study areas," said Mike Wisdom, a PNW Station research wildlife biologist, also in La Grande, who initiated the project. "This information

can help set goals for changing elk use in certain areas and guiding management prescriptions for elk habitat."

Provided by USDA Forest Service

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