Elk Use Of Forage And Cover In Response To Wildfire And Severe Snow Conditions[tws]

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Managers lack ecological context for applying recent experimental evidence that penned, fed elk (*Cervus elaphus nelsoni*) in northeastern Oregon did not benefit from forested thermal cover during winter. We offer additional context, based on measures of cover and forage use by a wild, free-roaming elk population from 1988 through 2004 on the Blackfoot-Clearwater Wildlife Management Area in western Montana. A 2250-ha wildfire in October 1991 and severe winter in 1996-1997 allowed us to assess the effects of stochastic variation in forage

availability and energy costs of foraging. Predictable availability of forage and space during early winter in the rangeland vegetation type was more important than non-forest shrub and forest types in shaping the normal winter home range of this elk population. However, herbaceous and shrub forages in non-forest types were most vulnerable to decreasing availability due to deep and/or crusted snow during the course of most winters, which was not alleviated with forage enhancement (e.g., the 1991 burn). Elk were confined to forest types throughout the severe winter. We posit that energy costs of foraging play an overarching role in determining the use of habitat components by wintering elk, and that forest stands are important to mitigate for a normal range of environmental restrictions in forage availability. We recommend forest management practices on elk winter ranges that maintain and recruit a mix of shade (to minimize snow crusting), snow intercept, understory forage, lichen production and litter-fall, and microsite components of thermal cover such as large-diameter boles and dense thickets.