Evaluating Elk Summer Resource Selection and Applications to Summer Range Habitat Management

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In much of the west, National Forest lands are managed in part to provide and protect elk (*Cervus elaphus*) habitat needs, and summer elk habitat is managed with consideration to motorized routes. We evaluated the relative importance of nutritional resources, access routes and other landscape attributes on elk summer resource selection at multiple spatial scales. Resource selection models for 9 different western Montana elk populations, as well are regional models using data from all 9 herds, were compared to determine the applicability of resource selection models for informing habitat management recommendations. We found that

in all populations nutritional resources, best represented using NDVI metrics, were the most important factors associated with elk summer resource selection. Access route disturbances, best represented by the density of all routes (i.e., routes open and closed to motorized use), affected resource selection in all populations, however, the influence of access routes was relatively small as compared to nutritional resources. Regional models of resource selection predicted resource selection across populations better than population-specific models, thus we recommend these types of models be used to inform regional habitat management. Our results suggest that managers should expand the current management paradigm for elk summer habitat to also consider nutritional resources as an important component of elk summer habitat. Time-integrated NDVI, an easily accessible and free data source, may be useful as an assessment tool to identify areas of optimal elk nutrition.