



## Utilizing Resource Selection Modeling in Rangeland Ecology

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Range managers are continually challenged with allocating forage resources over large tracts of land (> 1000 ha). They need tools to help understand livestock and wildlife distributions across these landscapes in order to allocate forage resources sustainably. Spatial distribution models contribute to an understanding of how landscape characteristics influence wild and domestic herbivores. Utilizing resource selection functions (RSF) provides the ability to create spatially explicit models that evaluate how landscape features impact animal movement patterns. Resource selection functions are not new to the scientific community, originally developed by landscape ecologists, and are commonly utilized by wildlife ecologists. Resource selection is the process of how animals select available resources over time and space. A RSF is any function that is proportional to the probability of use of a resource unit. Put another way, a RSF is the relative probability that an animal uses a particular resource unit, assuming equal availability of other units. A RSF is similar to a habitat suitability index, but with statistical rigour. Utilizing RSFs and GIS technology with rangeland management offers a quantitative characterization of resource use, can easily accommodate spatial structure, and can accommodate categorical and scalar variables. Likewise, RSFs offer the ability to be transferred into other landscapes with similar characteristics. In conclusion, resource selection modeling relates probability of resource use to other factors, (e.g. age, sex, production stage) and is a valuable analytical tool in evaluating management and large scale herbivory studies.

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