

Jim Duncan
GeoDay Abstract

Building the Skyline: Changing spatial patterns of land use and the consequences for ecological processes in Central Oregon.

The interplay between land use change and landscape ecology has long been recognized as a fundamental concern in planning and conservation efforts. The Skyline Forest in Central Oregon represents a confluence of several land use change processes typical of the American West. Flagging returns from natural resources extraction and increased demand for amenity values by in-migrants have fueled rural residential development in areas formerly used to grow timber. There are several competing visions of how the Skyline Forest might be developed and each will have different impacts on extant flora and fauna. The US Forest Service has used gradient nearest neighbor imputation, vegetation dynamics modeling and spatial landscape modeling tools to create datasets of likely future vegetation types and structures in Central Oregon under three different assumptions about how development on the Skyline Forest will proceed.

Responses to landscape pattern changes under each scenario are modeled for mule deer (*Odocoileus hemionus*), flammulated owl (*Otus flammeolus*) and American marten (*Martes americana*) using wildlife-habitat associations. Categorical habitat and vegetation community maps based on vegetation and structural characteristics unique to each focal species, as well as the ponderosa pine woodlands vegetation community, are created from the USFS datasets. Spatial statistics and landscape metrics quantify the spatial pattern for each alternative. The ecological implications derived from these analyses will be used to compare the outcomes of these three land use change scenarios in terms of spatial pattern and structure. Future work using these results will assess the opportunities and challenges Oregon's land use planning framework faces under these various alternatives.