

This morning I will be presenting a very brief introduction to both the approach the panel is taking in its review of Habitat Associations of the Northern spotted owl, and the topic of Habitat Associations (and Habitat Selection).

THE APPROACH:

The task of this panel is to review scientific information available after 1990. One example of the scientific knowledge in 1990 comes from the Interagency Scientific Committee report (Thomas et al. 1990:164). That report characterized spotted owl habitat as follows:

“Structural components that distinguish superior spotted owl habitat from less suitable habitat in Washington, Oregon, and northwestern California include: a multilayered, multispecies canopy dominated by large (>30 inches in d.b.h.) conifer overstory trees, and an understory of shade-tolerant conifers or hardwoods; a moderate to high (60 to 80%) canopy closure; substantial decadence in the form of large, live coniferous trees with deformities—such as cavities, broken tops, and dwarf mistletoe infections; numerous large snags; ground-cover characterized by large accumulations of logs and other woody debris; and a canopy that is open enough to allow owls to fly within and beneath it.”

For every study we review (studies written-up after 1990), we can ask:

Does it confirm what was known previously?

Does it contradict what was known previously?

Does it refine what was known previously?

Is this a new area of research?

Is this an old area of research in a new geographic region?

THE TOPIC

Habitat association vs habitat selection.

Habitat association simply measures conditions where owls are found. Habitat selection measures conditions where owls are found in comparison to some measure of available resource conditions (at the appropriate scale). While both habitat association and selection are informative, neither alone measure the ability of a population to sustain itself. What is needed to achieve that is to measure the Demographic response to habitat. We will be hearing some presentations using demographic responses today.

It is important to specify the spatial scale at which habitat selection is occurring. Different spatial scales may require different research approaches, both analytical and field methodological. Our conceptual approach to spatial scale is to organize from largest to smallest, which, to some extent, reflects increasing orders of habitat selection.

The largest scale is the landscape. Landscape level analyses are generally concerned with stand conditions. Stand condition is a general classification based on species composition, tree age or size, canopy closure, fire regime, soil, climate and/or topographic characteristics.

For an individual owl, the broadest geographic area used contains the habitat traversed during natal dispersal. This may only be evaluated through use of radio telemetry.

At the largest scale for a territorial owl, habitat is defined within a home range. This requires use of radio telemetry. Studies have related variation in home range size to physiographic province, degree of forest fragmentation, and variation primary prey of spotted owls.

Within the home range, we have a home range core area, which is defined as the area within a home range receiving disproportionately high use. This also requires radio telemetry.

Finally, there are landscape scale analyses that do not require definition of a home range or core area. In these analyses, circles are drawn on landscape scale maps centered around an owl location. Sometimes the circles are assumed to approximate the size of a core area or a home range. Often circles are also drawn around random locations on the landscape, and comparisons are made between the 2 types of circles. In other cases, concentric circles are used to evaluate the area which is most appropriate to create predictive models of spotted owl occupancy or reproduction. Or concentric circles are used to evaluate the degree to which landscape characteristics change with circle size.

Within these circles, comparisons can be made between not only the composition of habitat (in terms of stand conditions), but also the spatial configuration of habitat. Spatial configuration includes forest fragmentation, edge/area relationships, etc.

A finer scale of habitat selection is the stand level. At the stand level, we are concerned with forest structure (canopy cover, tree diameter distribution, canopy height diversity, snag density, coarse woody debris, etc).

Forest structure has been measured for spotted owl foraging locations, roosting locations, and nesting locations. As with Landscape level studies, stand level studies usually attempted to establish habitat selection by including measurements from random locations either within the same stand or within the forested landscape.

At the smallest spatial scale, we examine spotted owl nest trees and structures used for nesting within the nest trees: cavities and platforms.

Hopefully, this conceptual framework will help to clarify our discussions here in the next 2 days. Thanks to everyone for attending today.