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ONRC UPDATE

UNIVERSITY OF WASHINGTON • COLLEGE OF OCEAN & FISHERY SCIENCES • COLLEGE OF FOREST RESOURCES

Director's Message

John Calhoun, Director

In natural resources science and policy, it pays to have a reputation for objectivity and balance. While these two words were not specifically mentioned in the enabling legislation that created UW ONRC, fostering research and education that support sustainable natural resource-based industries clearly demands both objectivity and balance. Our Center has worked hard to achieve a reputation for objectivity and balance, and we have earned it.

Everyone has a personal bias based on their individual value system and the information to which they have access. Opinions and policies can and do change as new information becomes available. Our approach at UW ONRC is to accept policy goals as stated (e.g., northern spotted owl conservation practices). But we often critically analyze the strategies—and sometimes the regulations—that are employed to achieve the policy goals.

This issue of *ONRC Update* features work we are doing to more efficiently achieve development and definition of northern spotted owl habitat in the forests of the Olympic Experimental State Forest. The policy of restoring forested landscapes to provide suitable habitat and therefore to support populations of the northern spotted owl is a given. Finding the best, most efficient way to achieve this restoration is where the work is.

> Our Center has worked hard to achieve a reputation for objectivity and balance.

New information derived from analysis or monitoring results can be incorporated into the strategies to achieve public policy goals. This is sometimes called *adaptive management*. If done well, policy goals are much more likely to be achieved when progress is measured and results used to improve strategies evolves into a continuous feedback loop.

As mentioned, we work hard to earn our reputation for objectivity and balance. Our Policy Advisory Board, consisting of eleven members appointed by the State of Washington Governor, represents a full spectrum of natural resources perspectives. This is the real source of our balance. The Board has ensured that we track a balanced route through the sometimes highly value laden world of natural resource policy and science. So far it is working well.

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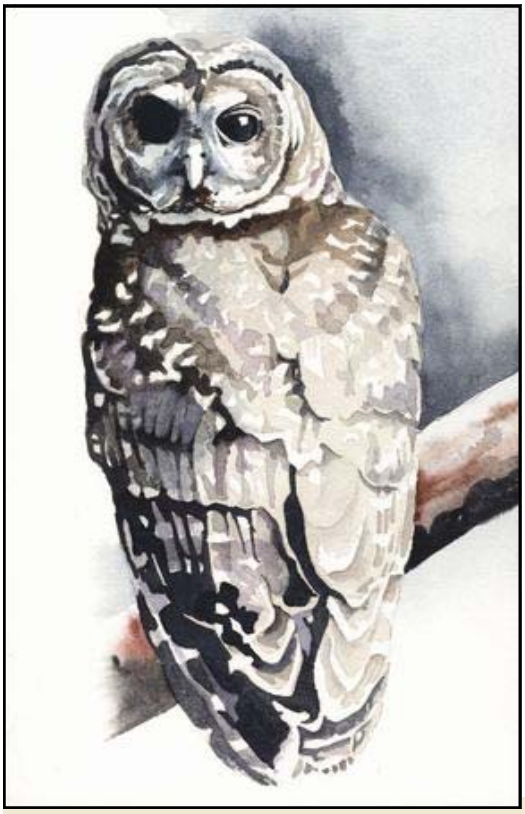
Applying Density Management Principles in Classifying Owl Habitat Within OESF

Jason Cross, Research Program Coordinator

2005 is the third year UW ONRC sponsored funding for projects related to the northern spotted owl (*Strix occidentalis caurina*) habitat. The current project is titled, *Application of Density Management Principles to Reduce Type II Errors in Classifying Young-Forest/Marginal (Northern Spotted) Owl Habitat Within the Olympic Experimental State Forest*. This project attempts to further apply the concepts developed in previous UW ONRC research – which concerned old-forest owl habitat – to young-forest (marginal) owl habitat. Washington State Department of Natural Resources' (DNR) Habitat Conservation Plan states that developing better stand-level definitions for nesting habitat is listed as a Priority 1 Research Objective.

Research in owl habitat is important to UW ONRC because all future (active) management efforts on the Olympic Experimental State Forest (OESF) are dependent on the DNR providing habitat for the northern spotted owl. Minimum quantities of young-forest/ marginal and old-forest habitat are required across each of the 11 planning units.

A habitat classification system with a high rate of Type I and/or Type II errors impairs the achievement of all management objectives. Type I errors are false-positives, or "seeing too much in the data." Type II errors are false-negatives, "not seeing enough in the data." Previous research sponsored at UW ONRC - *Using Volume to Reduce Type II Errors in Classifying Northern Spotted Owl Habitat on the Olympic Experimental State Forest* (2003) and



David Badders / Seattle Post-Intelligencer

Northern Spotted Owl

Relating Standing Volume to Forest Floor & Canopy Decadence Within the Olympic Experimental State Forest (2004) - demonstrated that volume and density can guarantee the (number of) species, canopy layers, trees greater than 30 inches, and amount of canopy closure required in the definition of old-forest owl habitat listed in Washington Administrative Code (WAC) 222-16-085. Managing for two structural elements (i.e., volume and density) is more efficient than managing for four structural elements as required by the WAC regulations. Volume and density may also identify habitat not implicated by the WAC; the result is a more effective definition of owl habitat.

The project is based on the fundamental research (Yoda et al. 1963) in density management. When tree size (i.e., biomass, volume) is plotted against density on a log-log scale, there exists a maximum size-to-density relationship with slope -3/2. Early in stand development, average tree size can grow without density-related mortality as trees occupy available or "free" growing space. Once all growing space is occupied and trees approach the maximum size-density limit, *further increases in average tree size must be accompanied by reductions in density*. The above principle has been quantified (Drew et al. 1979) for Douglas-fir and many other species (Farnden 1996).

If successful, this project may result in a volume and density range that may be a substitute

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definition (for WAC 222-16-085) for young-forest/marginal owl habitat on the OESF.

References

Drew, T.J., and L.W. Flewelling. 1979. Stand density management: An alternative approach and its application to Douglas-fir plantations. *Forest Science* 25:518-532.

Farnden, Craig. 1996. Stand density management diagrams for lodgepole pine, white spruce and interior Douglas-fir. *Pacific Forestry Centre: Information Report BC-X-360*. *Canadian Forest Service, Victoria, British Columbia, Canada.*

Yoda, K., T. Kira, H. Ogawa, and K. Hozumi. 1963. Intraspecific competition among higher plants: II. Self-thinning in overcrowded pure stands under cultivated and natural conditions. *Journal of Biology of Osaka City University* 14:107-129.

Thinning to create diversity in Pole stand along riparian zone

Susan Fox • www.foxstudio.biz

NORTHERN SPOTTED OWL

Strix occidentalis caurina

DESCRIPTION: Medium-sized owl without ear tufts. Lives in old–growth forest and mostly hunts small mammals, preferably flying squirrels.

RANGE: British Columbia to California

HABITAT: Large ranges containing significant acreage of older forest to meet biological needs. Superior nesting and roosting habitat would include: moderate to high canopy closure (60 to 80 percent closure); multi-layered, multi-species canopy with large overstory trees; a high incidence of large trees with various deformities (large cavities, broken tops, mistletoe infections, and debris accumulation); large accumulations of fallen trees and other debris; and sufficient open space below the canopy for owls to fly.

Sources: Marsha Milroy, *Seattle Post-Intelligencer (seattlepi.com)*, April 28, 2005; Thomas, Jack Ward (et al.). *A Conservation Strategy for the Northern Spotted Owl.* Interagency Scientific Report, May 1990; US Fish & Wildlife Service, Arcata Fish & Wildlife Office (arcata.fws.gov).

Small Saw stand harvested to *clump leave tree* configuration to enhance future stand complexity

OESF Corner

Northern Spotted Owl Conservation in the OESF: The Changing Forest Landscape

Al Vaughan, State Lands Assistant Regional Manager, Olympic Region
Washington State Department of Natural Resources

The listing of the northern spotted owl as a threatened species under the Endangered Species Act of 1973 and the forest conservation changes that followed were one of the motivators for the creation of the Olympic Experimental State Forest (OESF) and the Washington State Department of Natural Resources' (DNR) enhanced collaboration with UW ONRC. DNR has implemented the conservation changes, also referred to as *recovery strategies*, for the northern spotted owl population in the OESF since the early 1990's.

A company interested in locating a small wood mill near Forks recently asked DNR to produce a forest age class distribution report. After receiving the forest stand numbers from our Geographic Information Systems database, I went about charting the results as DNR's response to the company's request.

This recent age class distribution project made me curious about what the age classes looked like 15 years ago and whether we could detect changes resulting from the application of the recovery strategies. I gleaned out old data stored in archives from projects I worked on in the past. I had 1990 age class data from a project directly related to past northern spotted owl habitat work and 1998 data from a project based on predicting forest changes as a result of a proposed land exchange.

My observations about the forest landscape during this 15-year period:

1. A wave of young forest stands, resulting from the harvest regimes of the 1970's and 1980's, matured into small wood stands.
2. These small wood stands provided ample opportunity for commercial thinning activities integrated with habitat recovery objectives to create stands with more diversity and complexity.
3. The data shows a forest in transition, moving towards more wildlife habitat that is guided by the northern spotted owl landscape-wide recovery objectives of 20% Complex and 20% Old Forest habitat.
4. Today's forest is more capable of supporting increased commercial volume production (as compared to the last 15 years) due to the increase of Small Saw and young Complex forest stands.