

Young trees emerge amid old-growth trees and snags after a wild fire swept this hillside in a Coast Range forest 30 to 40 years ago. Scientists say diverse habitats and complex structural patterns develop in these young natural stands.

Many bird species, such as the varied thrush, thrive in young natural forests that have snags and downed logs.



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Young forests may need aid also

□ An Oregon study says promoting biological diversity is the key

By RICHARD L. HILL of The Oregonian staff

oung natural forests need to be conserved in the Northwest just as old-growth forests do, according to a new study by Oregon researchers.

The report, published this week in the journal Bio-Science, says the young natural forests — roughly between 20 and 70 years old — have a diverse structure and contain as many animal and plant species as old-growth forests, maybe more. "Until it is clear that forests managed for wood

"Until it is clear that forests managed for wood production can be made suitable for native species," the report states, "managers should consider retaining ... representative tracts of all natural forest stages, not just old growth."

With curbs on old-growth cutting to save the spotted owl, this would likely have an additional adverse impact on the region's timber supply, said Andrew Hansen, assistant professor of forest science at Oregon State University and the study's principal investigator. "But that may be the cost of conserving biodiversity."

Hansen works with the Coastal Oregon Productivity Enhancement program in Newport. Other authors of the BioScience paper included Fred Swanson, Thomas Spies and Janet Ohmann, researchers with the U.S. Forest Service's laboratory in Corvallis.

The report, which is based on several earlier studies and is one of the first to compare natural and managed forests at all age levels, found that:

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A harvest unit in the Willamette National Forest was designed to imitate the structural patterns typical of natural forests.

Forests: Each life stage significant

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• Diverse structure, such as various tree sizes and spacing between trees, and from 50 percent to 90 percent of the same plants and animals are found in any age or type of natural forest.

• Some species thrive only in young forests that have downed logs, snags and other features characteristic of a recently disturbed forest. The western bluebird, the American kestrel and various woodpeckers are dependent on this type of forest.

• There is a need to develop young managed forests that emulate the features of a young natural forest. Most of the features of biodiversity are not found in forests managed for timber production by traditional techniques such as clear-cutting, debris removal and replanting with a single tree species.

The paper says that a continuing study in the Oregon Coast Range indicated that the number of bird, small mammal and amphibian species was slightly higher in a natural forest than in a managed Douglas fir plantation. However, the "total abundance of birds was 50 percent higher, and amphibians 130 percent higher in natural forests than in plantations." The total mammal abundance didn't differ significantly between the two habitats, the report states.

Hansen said that in addition to a forest's final old-growth period, there are three other natural stages,

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Andrew Hansen, Oregon State University

with each stage offering important habitat for plant and animal species:

• The first stage lasts 20 to 30 years after a devastating natural disturbance, such as fire, insect attack or plant disease. This stage is characterized by an abundance of shrubs and annual plants before the conifers become dense enough to shade out the other plants.

• The second stage — young forests — is when the forest canopy closes, which lasts up to about 70 years. "That's typically a time when the diversity of plants on the forest floor drops substantially from that initial stage," Hansen said.

• The third stage — maturity lasts from about 70 to 200 years. "That's the point in which structural diversity is starting to build up again and reaches a higher level in the old-growth stage," Hansen said.

"What we're suggesting here is that all age classes of natural forests are important, not just old growth," he said. "If we are serious about maintaining biodiversity and want to continue multiple-use forestry, we're going to have to change our approach. And the research indicates that structural diversity is the key." Hansen said that a common forestry practice is trying "to suppress every type of natural disturbance, especially fire. And if we fail to stop the disturbance, we rush right in to salvage whatever timber is left. By doing this, we're eliminating important habitats for some species."

He added that just as the spotted owl depends on old-growth forests, some plants and animals can survive only in young, naturally disturbed forests.

The paper states that the value of younger natural stands for conservation of biodiversity is often underestimated. It cites a Forest Service study that indicates species richness in the Northwest's natural forests is more strongly related to elevation, latitude and nearness of a forest to the coast than to the stand's age. Hansen said this suggests that young natural forests in the Coast Range deserve as much conservation as old-growth forests in the Cascades.

Hansen said the paper has created some controversy among forest scientists in OSU's College of Forestry. "The main point of controversy is the reference to retention of natural forests," he said. "Certainly the issue of preservation vs. nonpreservation creates a highly divisive issue. I think that's where the paper attempts to not be inflammatory. We simply say that if you look at the facts objectively and until we know more about how different forestry practices work, it appears prudent to maintain a natural forest."

He said that a paragraph at the end of the paper says that "ultimately it is up to society to decide priorities of public lands. So we're not advocating any particular positions, we're simply laying out approaches for those lands where diversity is a priority."

A second criticism is that the data used in the study are insufficient and incomplete, Hansen said.

"We pulled together the most complete set of studies that we could, but it turns out that very few studies have rigorously compared structure and species diversity in natural forsts and managed forests, of a similar age," Hansen said. "So the conclusions we draw are based on the best available data. In the paper we try to be clear about what evidence our conclusions are based on and let the reader judge whether that conclusion is justified."

Hansen said that more research is needed to determine the consequences of differing forestry practices.

"I think that is happening quite a lot," he said. "Several of us at OSU and elsewhere have studies now in place that are trying to answer some of these questions."