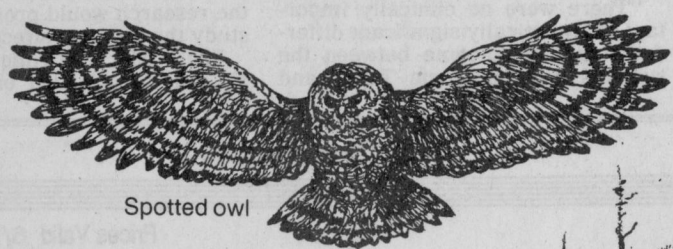


New Logging Approach Tries to Mimic Nature



Spotted owl

Biological Legacies Of the New Approach

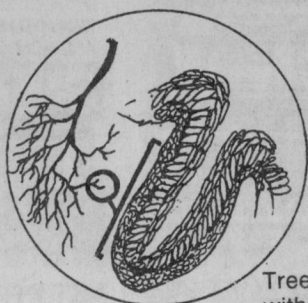
The New Forestry mimics how forests recover from natural destruction, like fires. Certain plants and animals survive, creating a web of continuity to aid regeneration. Some scientists suggest that the new logging approach may even leave enough habitat for rare species like the spotted owl.



Red-backed vole

Leaving shelter for animals that contribute to forest health.

Large rotting logs are home to the red-backed vole, a rodent, which feeds on truffles. It drops fungal spores, which envelop the roots of trees. The fungi and the trees share nutrients, and an antibiotic produced by the fungi protects the trees against diseases.



Tree root with fungal sheath

'A little chaos can be a wonderful thing.'

A tangle of living and dead trees, stumps and debris, left behind after logging or natural destruction, recycles nutrients into the soil as the wood decomposes, shelters the growth of new seedlings and helps control erosion and flooding.

Trees and debris are left behind to help recovery of forest.

By JON R. LUOMA

CITING mounting evidence that conventional logging could be causing far more harm to forests than once believed, a group of scientists in the Pacific Northwest has proposed a redesigned approach to logging and forest management that they've dubbed the New Forestry.

The scientists are calling for foresters, particularly those responsible for managing woodlands in the public domain, to move away from "clear cuts" that denude logging sites of all trees and leave the forest fragmented in a checkerboard patchwork. Instead, they say, loggers should be required to leave more living trees and natural debris on logging sites to help regenerate the forest. But these sites could be much larger than the current clear cuts, and they could be cut in a way that preserves larger intact blocks of mature forest.

Although the new approach has been discussed in detail only since last year, Federal foresters are already embracing the techniques in two highly productive national forests in Oregon.

Late last week the Bush Administration sent Congress a new Forest Service policy statement suggesting that the techniques could become widespread in national forests. The Administration's letter with the policy said the new outlook might require that even less lumber was produced in areas where logging could not be accomplished without environmental peril.

The Forest Service policy says "partial cutting will increase, and clear cutting will be used less" in national forests.

A bill that would require the Forest Service to pursue New Forestry even more aggressively than it is now is circulating among members of the Washington and Oregon delegations in Congress.

In part, the approach is seen by some Forest Service officials and politicians as a possible compromise in the conflict between environmentalists and the timber industry over protection for old forests in the Pacific Northwest. But industry officials and environmentalists are both wary of the new approach and are giving it mixed reviews.

These ancient rain-soaked forests, which include some of the largest firs, spruces and hemlocks in the world, also hold billions of board-feet of high quality lumber, and loggers have long expected to have access to much of it. But in recent years, environmentalists have pressed for protection of the northern spotted owl, a rare species that is dependent on the old forests. Protection for the owl under Federal laws like the Endangered Species Act would presumably also result in the preservation of large expanses of old forests and their ecosystems, which include several other rare species.

Last April, the conclusions of a special scientific committee created by Congress to provide a definitive answer on the owl's habitat needs rocked the timber industry. The panel said that to assure protection of the bird, 80 to 100 large blocks of forest, up to 60,000 acres each, would have to be preserved. Economic analysis has suggested that such a level of forest

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protection could lead to the loss of some 10,000 jobs in Oregon and Washington.

The Fish and Wildlife Service is widely expected by various interested experts to rule next week that the owl will be classified as a "threatened" species, a designation one step below endangered under Federal law and requiring stringent protection. This is expected to give further momentum to efforts that would protect both the owl and the old forests.

"New Forestry may resolve the clear-cut versus lock-up dilemma," said Representative Jolene Unsoeld, Democrat of Washington. Ms. Unsoeld has drafted a bill that would require trials of the new logging techniques in three of the areas preserved for owls partly to test whether a sensitive species can coexist with the new approach to logging.

Whether the New Forestry offers much hope to ease conflict is unclear. For the timber industry, there seems little doubt that its output of logs per acre would be reduced.

"We don't need a New Forestry," said Ralph Saperstein, vice president of the Western Forest Industries Association. "There's no crisis in our woods and no reason to be rushing in and making changes when we don't have any problems replanting and regenerating a forest."

Environmentalists, on the other hand, believe they are on the verge of a major victory in preserving old forests over the spotted owl issue and fear that the New Forestry could be a step backward.

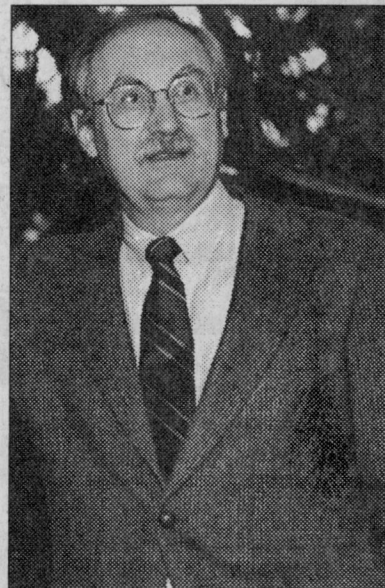
"The New Forestry is no substitute for protecting old growth," said David Wilcove, an ecologist with the Wilderness Society.

Learning Secrets Of the Forests

The new approach grew out of two decades of studies in the Forest Service's Andrews Experimental Forest, east of Eugene, Ore. In general it is based on the growing knowledge of how forest ecosystems evolved over millions of years and how they recover from disturbances like fires; it is a response to calls for forestry that mimics the natural patterns of destruction.

"Most forests are driven by disturbances," said David Perry, professor of ecology and forestry at Oregon State University. "So the idea of disturbing a forest to take out commodities is not necessarily a contradiction in terms of maintaining a natural forest."

Fred Swanson, a Forest Service senior scientist who directs ecosystem research in the Andrews Forest, said a "pivotal change in the history of forestry" is taking place. "It used to be that we were managing the forests as tree farms," he said. "Now



Mary Levin/University of Washington

Jerry Franklin of University of Washington says New Forestry cuts erosion and helps return nutrients to soil.

Debate Has Raged Since the 1930's

But some critics contend that there is virtually nothing new in the New Forestry. "As a theory, there's really nothing radically new here," says Mark Rae, executive director of the American Forest Resource Alliance, an industry trade group.

Mr. Rae and others point out that debate raged as long ago as the 1930's in the Forest Service over whether woodlands in the Pacific Northwest should be thoroughly clear cut and replanted or larger landscapes should be subjected to selection cutting, in which only a few trees are removed each year.

The New Forestry differs from selection cutting. It is essentially a modified clear cut, in which more trees are removed than in selection cutting but over smaller area, and then the tract is abandoned and left to regenerate.

The New Forestry proponents are not advocating selection cutting, and while some environmentalists favor the technique, loggers generally object to its high cost. Selection cutting can also create environmental problems, said Dr. Franklin, because it requires more road maintenance and more intrusion of loggers into the forest.

While early foresters believed that clear cutting did imitate fires and natural disturbances, the New Foresters say their research has shown otherwise.

"The old view was that whole stands were wiped out," said Dr. Perry. "One-hundred-thousand-acre holocaustic fires came along and de-

Experiments In Two Forests

The New Forestry proponents have suggested that in western national forests, where clear cuts of about 40 acres now commonly checkerboard the landscape, cuts should actually be of hundreds of acres. That, in theory, would leave larger, but less fragmented, expanses of forest intact. Emerging ecological theories suggest that many species need larger blocks of deep forest interior habitat than was once believed.

Already, supervisors of both the Siskiyou National Forest in southern Oregon and the Willamette National Forest just to the north, the most productive of all the nation's public forests, have begun experimenting with the techniques. John Hoffman, timber manager for the Siskiyou Forest, said that within a month the staff there will issue a draft of an environmental statement outlining its intentions to practice some New Forestry techniques first on a site of 15,000 acres and eventually throughout the forest.

Officials at the Weyerhaeuser Corporation say that although the company's extensive private holdings of timber in Washington and Oregon include only a tiny fraction of true old-growth forests, they have begun to

consider applying some of the techniques to younger, regenerated forests. But Jim Rochelle, manager of environmental forestry research, said the company was approaching the New Forestry cautiously. "We think it's worth experimenting with, but we don't think we should apply it in a broad scale before we know more about it," he said.

"The theory is already being used by people who want to cut as few trees as possible on as few acres as possible, when the theory's central tenet is that you should be able to cut at least a few trees on lands where we haven't been able to cut before," said Mr. Ray of the American Forest Resources Alliance. "As things stand, it looks to us like its going to become a novel excuse to cut fewer trees."

James Montieth, director of the Oregon Natural Resources Council, an environmental group, takes a contrary view. "New Forestry would be great if it were coupled with a reduction of the cut so we reach a place that's really sustainable," he said. "But there are some in the timber industry who want to keep cutting at a high level and who might think New Forestry is the answer: you just cut in a different way. We're concerned that it not become a placebo for the real problem, which is, we're just cutting too fast in the national forests."



U.S. Forest Service

Experimental New Forestry site in Blue River district of Oregon shows ground debris, removal of some tree tops and remaining living trees.

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Fred Swanson, a Forest Service senior scientist who directs ecosystem research in the Andrews Forest, said a "pivotal change in the history of forestry" is taking place. "It used to be that we were managing the forests as tree farms," he said. "Now we're trying to manage the forest like an ecosystem."

Dr. Perry said the key to the new technique was that in fires and other disturbances, certain remnant plants typically survive, and these serve as "threads of continuity" that "provide the basis for the recovery of the forest."

The remnants include a scattering of large live trees, various trees that are dead but still standing and a wealth of logs and other debris on the forest floor. These biological legacies, as Dr. Perry and his colleagues call them, provide the shade or nutrition needed by seedlings, greatly help control erosion or provide habitat for animals that are important ecological links in forest regeneration.

The researchers say loggers should be required to mimic such a disturbance as they cut, leaving behind as many as one-fifth of the largest trees as well as many useable logs from the forest floor.

Such ideas contradict much of the philosophy of conventional forestry. Especially in the coniferous forests of the West, typical logging involves clear cuts, which denude large tracts. The cuts are often followed by controlled burns and applications of herbicides to groom a site for economically valuable tree species like Douglas-firs, planted in cornfield-like expanses.

The philosophy of such forestry holds that mature natural forests, with their diversity of ages and types of trees and other plants, are far less efficient producers of lumber than carefully tended stands limited to productive species. Clear cuts in such monoculture forests of similar sized trees also make mechanized logging easier.

But the research on old forests in the Pacific Northwest has suggested that conventional logging and regrowth may deny regenerating woodlands several long-term ecological benefits.

Among them, said Jerry Franklin, Bloedel Professor of Ecosystem Studies at the University of Washington and formerly chief plant ecologist for the Forest Service, include better pest and fire resistance, less soil erosion and more effective processing of nutrients.

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Mr. Rae and others point out that debate raged as long ago as the 1930's in the Forest Service over whether woodlands in the Pacific Northwest should be thoroughly clear cut and replanted or larger landscapes should be subjected to selection cutting, in which only a few trees are removed each year.

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While early foresters believed that clear cutting did imitate fires and natural disturbances, the New Foresters say their research has shown otherwise.

"The old view was that whole stands were wiped out," said Dr. Perry. "One-hundred-thousand-acre holocaustic fires came along and destroyed everything in their path. But as we've looked at forest history, we've found that everything wasn't being wiped out when disturbances swept through."

Such disturbances may remove many of the trees, he added, but they nevertheless leave behind a complex surviving web of plants and animals. Besides the shade and animal habitat provided by standing trees, both dead and alive, the huge water-laden logs on the forest floor help control erosion and flooding and pump tons of nutrients into soil as they decay, sometimes over as long as five centuries.

Crucial Role Of Rotting Logs

Growing knowledge about the role of logs and other debris has been important in understanding the life in forests. In one survey of old growth, researchers weighed 219 tons of fallen logs on a single acre of forest.

"The Forest Service used to spend literally hundreds of dollars per acre to clean up logs," said Dr. Franklin. "The primary view was that they were a fire hazard and a waste, that they didn't do anything but cause problems in the forest. No one had considered that, ecologically, the logs might be doing a great deal. In retrospect, it's almost unbelievable that we could have been that stupid."

Small mammals that depend on rotting logs for habitat, like the rare red-backed vole, have evolved with ancient forests so that they assist the recovery after a disturbance. The rodents subsist almost solely on the flowering parts, or truffles, of specialized fungi called micorrhizae. The voles then distribute the fungi spores in their feces.

The micorrhizae form sheaths around the fine roots of growing trees. They draw energy from the trees as carbohydrates but they also assist the trees by processing and sharing nutrients from the soil.

To mimic a natural disturbance, the New Forestry theorists say, loggers should leave untouched 20 to 70 percent of the living trees of various species, including huge specimens that could otherwise yield enough lumber to build an average house, as well as downed logs and standing dead trees.

Dr. Franklin, who refers to such a New Forestry site a "sloppy clear cut," acknowledges that it might actually appear worse than a conventional clear cut. Still, biologically, he says, "a little chaos can be a wonderful thing."

Barry Flamm, chief forester for the Wilderness Society, cautions that such a consideration could prove an obstacle for the New Forestry.

Although Dr. Franklin says that leaving 20 percent of the mature trees might be a typical number, Harold Salwasser, a senior researcher at the Forest Service, says that on some sensitive sites, "it might mean going in with a helicopter and taking out only a few trees and not going back for decades."

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