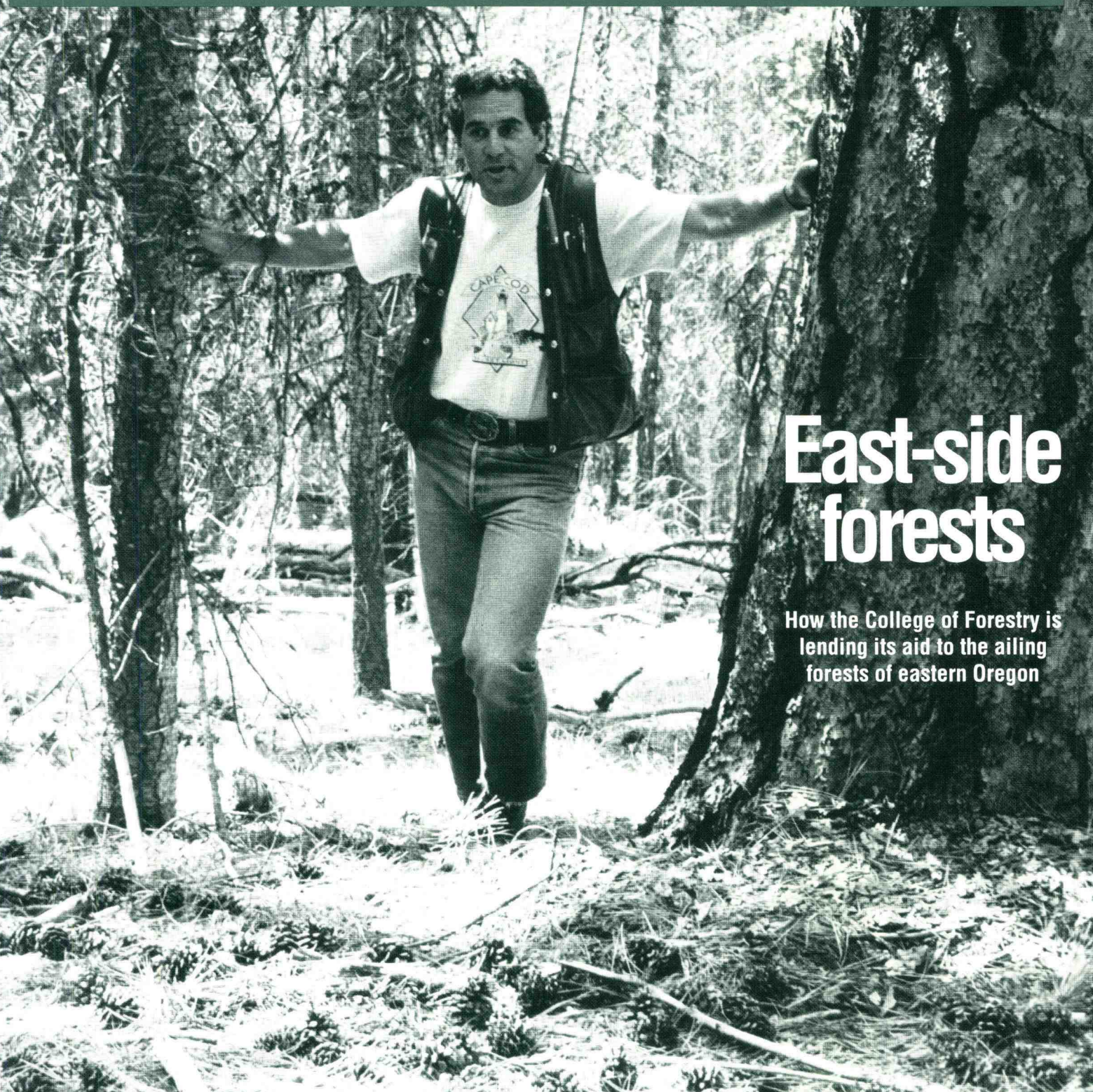
focus on forestry

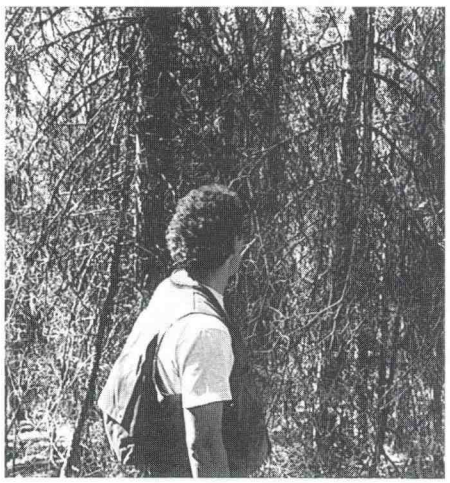
at Oregon State University

Winter 1993



East-side forests

How the College of Forestry is lending its aid to the ailing forests of eastern Oregon



Forests at risk. *Forestry Extension Agent Steve Fitzgerald (that's him on the cover, too) gazes at an ailing mixed-conifer forest near Prairie City.*

focus on forestry

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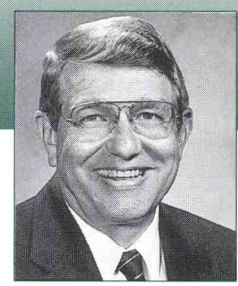
from the Dean



Winter 1993

The College of Forestry at Oregon State University has a reputation as a "west-side" forestry school. Corvallis is nestled in the foothills of the Coast Range, and our research forests are in the Coast Range and western Cascades. Even our "Fernhopper" nickname conjures up visions of lush, wet Cascade and Coast Range forests.

But if you think that's all we are, you've been given a "bum steer" (no pun intended!). For over two decades, the College has had active research programs east of the Cascades. We have had a very active Forestry Extension program in both central and northeastern Oregon. And we have new research and technology-transfer programs starting with the Confederated Tribes of the Warm Springs and as a partner in the recently formed Blue Mountains Natural Resources Institute, headquartered in LaGrande.

The scope of our interest in east-side forests is quite broad. In this issue of *Focus*, you'll learn about work underway in forest health, reforestation, riparian-zone management, silviculture, recreation, and forest products. Much of our work focuses on key forest policy issues of the region.

We have also made a special effort to keep in touch with the people and resource managers east of the Cascades through visits and field trips and by tapping regional leaders for advice and counsel. John Shelk, president of Ochoco Lumber, is chairman of the Forest Research Lab's Advisory Committee. Tom McDonald, vice president of Contact Lumber in Prineville, also serves on the Advisory Committee, representing the region's growing secondary wood products industries.

I hope you'll enjoy reading about our College's many programs and strong presence east of the Cascades. Our mission is to serve all of Oregon's people. I am very proud of our faculty's efforts to carry that mission throughout the eastern three-fourths of our state. I hope you will be, too.

George Brown

George Brown
Dean, College of Forestry
Oregon State University

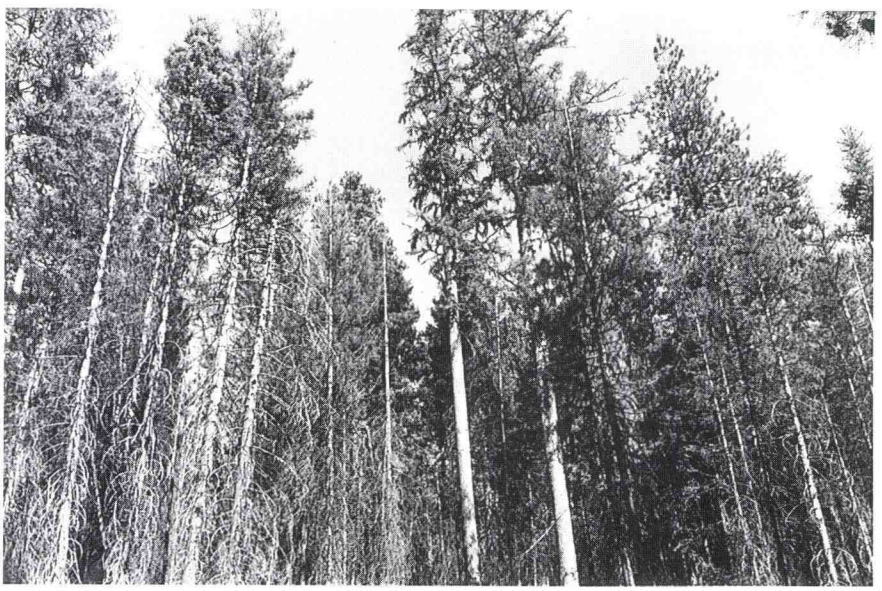
Healing east-side forests

The College of Forestry reaches across the mountains

The map on Greg Whipple's wall, in his office at the Prairie City Ranger District office near John Day, shows a patch of national forest from which a slender territory called Genesis has been carved out.

The map shows a 5,920-acre stretch of forest, shaped like a banana hanging slightly to the right, from northwest to southeast, its various irregularly shaped parcels colored in shades of yellow and green.

You have to look close to find the deepest-green places, for they are small and few. These green islands are the more-or-less-healthy woods, those not yet penetrated by the spruce budworm and the bark beetle. They cover only seven percent of the forest shown on this map.



A change in composition. *Big pines and larches—relatively healthy—dominate this budworm-damaged stand on the Genesis research site.*

Drive a little ways east of the office, up into the hills of the Malheur National Forest, and you see what the yellow patches really mean: forests with their canopies in tatters, denuded fir trees standing like vertical cordwood, the healthier pines and larches showing a tentative green amid the brittle brown thickets.

You can see the same thing all over the east side—a swath of three to four million acres of dead and dying trees stretching from the Blue and Wallowa Mountains down through the Ochocos, and up to the eastern crest of the Cascades near Sisters.

The forests of Oregon's east side are suffering from a massive infestation of insects and disease. Spruce budworms have moved into the susceptible mixed-conifer forests, and their larvae are eating the Douglas-fir and true firs down to skeletons. Secondary pests such as the Douglas-fir beetle come into the stressed stands and administer the death blow. Disease-causing organisms such as root-rot pathogens further capitalize on the stress in the stands, spreading outward from roots of sick trees to infect healthy ones.

An ecosystem out of balance

THESE ORGANISMS HAVEN'T SUDDENLY appeared out of nowhere. They are common inhabitants of even a healthy forest, their populations waxing and waning as part of the normal forest dynamic. But over the past few years their impact has reached epidemic dimensions. Why? Foresters say it's the result of an ecosystem out of balance, the legacy of a long history of fire suppression and selective logging of the higher-value pines and larches.

On top of that, a six-year drought has turned the dead and dying trees into kindling wood on the stump. Suppression of the periodic, low-level fires that used to sweep through these stands has led to a buildup of dry fuel, increasing the odds of really big fires—stand replacement fires, as foresters term them. Last summer passed, mercifully, without a catastrophic stand replacement fire. But east-side foresters and citizens know that winter is only a temporary respite.

The crisis has attracted national attention, and it has pulled together a diversity of ownerships and agencies into common cause to help heal eastern Oregon's ailing forests.

The OSU College of Forestry is a high-profile player in that effort. Faculty from a dozen disciplines are examining the region's soils, streams, plant composition, insects, and disease organisms. They are exploring different patterns of harvest, varying levels and types of weed control, and the applicability of controversial silvicultural techniques like prescribed burning. And OSU Forestry Extension agents are working with east-side forest landowners, especially private, non-industrial owners, to help them manage their forest lands for health and profit in the face of threats from insects, disease, and fire.

This article is too brief to give a comprehensive account of the many

College of Forestry research projects going on east of the Cascades. We've spotlighted a few of them, just to give you an idea of the commitment and the expertise that exists at the College for helping to solve the problems of east-side forests.

More than salvage

THE GENESIS PROJECT—THE MAP ON Greg Whipple's wall—is one in which the College of Forestry's scientists and Forestry Extension agents are deeply involved, along with scientists and administrators from the Forest Service's PNW Research Station and the Malheur National Forest.

Genesis is a local showcase of the nationwide Forest Service initiative known as Ecosystem Management, formerly called New Perspectives. "It's a New Perspectives demonstration area, which gives a larger scope to what we do here," says Whipple, interdisciplinary team silviculturist on the Malheur's Prairie City Ranger District. "We're not only managing the forest, but we're charged with facilitating research, study, and interpretation, too."

Clinging to life. *This insect-ravaged grand fir on the Genesis study site has produced new, green shoots from its trunk.*

Because of the magnitude of the problems it hopes to solve, the research at Genesis will be large-scale (600 acres) and cross-disciplinary. Various levels of harvesting and thinning will be compared and contrasted. Methods of on-site processing (for example, turning trees into logs or chips right in the forest) will be tried. Certain stands will be burned after harvesting (carefully) and then compared to those left unburned. Even-aged and uneven-aged harvesting strategies will be evaluated.

The project will encompass forest insect and disease dynamics, harvesting methods, silviculture, and—importantly—quick technology transfer to landowners, says Genesis team member Bill Emmingham, an OSU silviculturist and Extension specialist. "The object of the Extension part," he says, "is to put on the ground some comparisons of management options, and then let people come in and see them."

The Genesis study will be carried out as part of what the Forest Service calls a salvage harvest of timber in the 5,900-acre area. But that word, "salvage," doesn't accurately describe what's happening in the study, according to Steve Fitzgerald, Forestry Extension agent based Redmond and another Genesis team member. "It implies that the only motive (for harvesting trees) is economic. What we're doing is deciding from a health standpoint which trees should be taken and which should be left."

Thus, even though the pine and larch have more commercial value than the true firs and Douglas-firs, the Genesis researchers plan to leave as many of these as possible to serve as the foundation for a healthy future forest, a forest in which the composition more closely matches the pine-and-larch-dominated stands of the past.

The other Genesis investigators, besides Emmingham and Fitzgerald, are Paul Oester, OSU Forestry Extension agent based in LaGrande; Greg Filip, OSU Forest Science associate professor and forest pathologist; Darrell Ross, OSU Forest Science assistant professor and forest entomologist; and Michael Lambert, mechanical engineer at the Forest Service's PNW Research Station. The team hopes to have some definitive answers within five years, and they expect to monitor the study area for two decades.

Outcompeting the bugs

GENESIS IS ONLY THE LATEST OF SEVERAL important studies undertaken by OSU College of Forestry researchers on the east side, studies that not only have helped managers understand the dynamics of ailing forests but have helped signal the direction for future research. For example, recently released results from a seven-year set of trials conducted near Burns show that thinning and fertilization of trees can help them outcompete bugs, even in stressed forests. The study was begun in the summer of 1984 by a team of scientists from OSU and the Forest Service's PNW Research Station. The test site was a grand fir stand defoliated by spruce budworm.

Investigators studied the effects of tree thinning and fertilization, used both separately and together, and conducted a comprehensive analysis of soil resources, tree chemistry, and other factors. They found that thinning and fertilizing together boosted tree growth efficiency 140 percent, and none of the trees died from insect attack. Thinning alone increased tree growth efficiency 60 percent. Fertilizing alone helped, but the response time was delayed. Results of the study were published in a four-part article in the journal *Forest Science* in April of 1992.

"What we found," says investigator Kermit Cromack, forest ecologist and OSU Forest Science professor, "was that the insects literally couldn't keep up with the foliage growth on the trees," even though the insect larvae increased in numbers. "The trees just outgrew the bugs."

The effect of the treatments on a troublesome root-rot fungus, *Heterobasidion annosum*, also was favorable. The amount of decay found in trunk wounds was significantly less in trees that had been thinned and fertilized, says forest pathologist Greg Filip, another investigator on this study (and also on the Genesis study).

Diseases are another secondary problem, their most successful attacks taking place in forests already weakened by the spruce budworm. Their

damage is less obvious than the budworm's, and their overall effects on the region aren't well quantified, Filip says. "It's something we're still trying to assess."

Concern for riparian zones

EAST-SIDE STUDIES CONDUCTED BY College researchers are dealing with all aspects of forestry there—not just problems directly stemming from drought and bugs, but important issues in riparian-area management and weed control. Attention to these issues is important, say managers, if a healthy forest ecosystem is to be reestablished on the east side.

An important study, published in 1990 by Forest Engineering professor Hank Froehlich and two colleagues, concluded that past timber harvesting practices hadn't damaged fish habitat in the streams they studied. The investigators looked at 29 streams flowing through logged and unlogged areas in the Blue Mountains, measuring many factors including insect populations, abundance of pools, and amount of woody debris in the streams. "Timber harvesting activities do not appear to have damaged aquatic insect habitat and pool abundance was not altered," the paper's abstract stated, "suggesting the habitat's carrying capacity for fish was not affected."

The authors noted that the woody debris from past logging operations had generally not been removed from these streams. Debris removal was the common practice (more on the west side than the east) up until a few years ago, prompted by the mistaken belief that chunks of wood in streams were bad for fish. Future logging operations, the authors say, should make sure trees are left standing near streams as a source of future woody debris.

Taking a look at a related riparian issue, Forest Engineering master's student Rob Gill (Froehlich is his major professor) is conducting a study on sediment delivery to small stream channels in the Blue Mountains. Gill is also hydrologist on the LaGrande Ranger District of the Wallowa-Whitman National Forest. He is collecting and analyzing sediment from a heavily roaded, 5-square-mile sub-watershed of the upper Grande Ronde River, which lies on the Forest Service's Starkey Experimental Forest near LaGrande.

"Using information gathered from this study," Gill says, "a manager could develop a 'sediment budget' for watershed management guidelines. The better we can predict the effect of timber harvest and road building on streams, the better we can protect them." His co-investigators are Froehlich and Jim Sedell, an aquatic ecologist with the PNW Station.

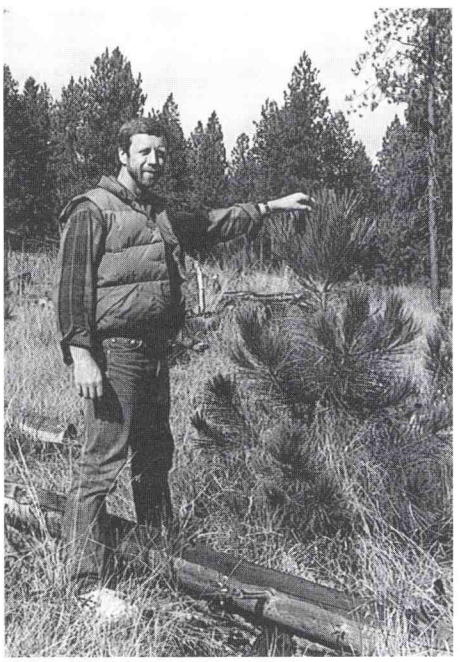
Another study on the Grande Ronde involves monitoring the summer water temperature at 40 different locations on the watershed. This study is being conducted by Sedell and Bob Beschta, hydrologist and OSU Forest Engineering professor. Like Gill's sediment study, the work is being done to validate a computer model, Temp 86, which Beschta developed to predict stream temperatures in areas where the riparian vegetation has been altered. Stream temperature, like sediment, is an important indicator of the health of the habitat for fish.

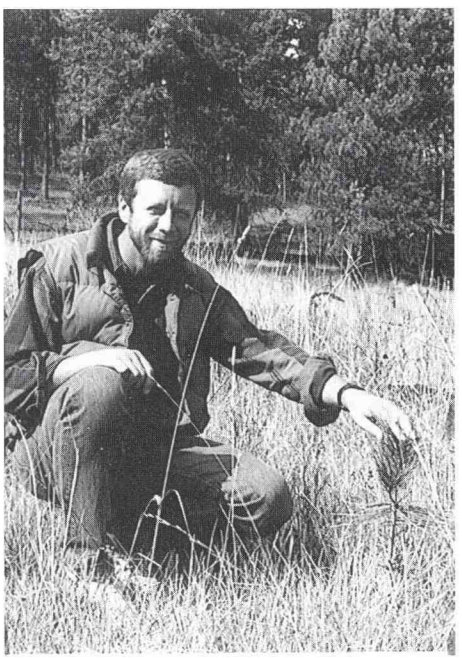
Research like this is especially pertinent on the Grande Ronde, Gill says, because the river is one of two Oregon tributaries to the Snake River with a spring chinook salmon run. The Snake River chinook was recently declared a threatened species by the National Marine Fisheries Service. These studies and others, Gill says, will contribute eventually to a recovery plan for the species.

In another study, Beschta and colleague Wayne Elmore, a riparian specialist for the Bureau of Land Management, looked at the effect of the grazing of cattle on riparian areas in eastern Oregon. While they concluded in their 1987 paper that indiscriminate grazing does damage streams, "(for) many streams . . . total livestock exclusion is not necessary; livestock grazing and healthy riparian systems can coexist even during recovery."

Weed control is also important in restoring forest health. Paul Oester, Forestry Extension agent based in LaGrande, and Bill Emmingham, silviculturist and Forest Science professor, put in some herbicide trials in 1988 at the Hall Ranch, an OSU Agricultural Experiment Station test site near Union. They compared four different levels of coverage of the herbicide Velpar L around planted Douglas-fir and ponderosa pine seedlings.

They found that survival increased dramatically even with the lowest level of herbicide treatment—from 28 percent in the untreated controls to 60 percent with a single spot spray in the first year. A small spot was as good as a large spot. A broadcast





With (left) and without weed control. *Paul Oester's vegetation management study displays graphic results.*

spray increased survival to 70 percent, but a second broadcast spray didn't increase it significantly beyond that.

Growth of the seedlings, however, was more hampered by the competing weeds (Kentucky bluegrass and elk sedge); it took a lot of weed reduction to improve growth significantly.

Information like this, Oester says, can help provide incentive for a forest landowner to invest in turning a sick forest into a healthy one. "If you can increase survival, you don't have to go back and replant, which is costly. If you're willing to accept a tradeoff in the form of slower growth—and that's reasonable for many landowners—you can get a new forest established quickly and at less cost per tree with a minimal level of weed control."

A powerful new tool

Eastern Oregon's forest health problems have made a case for what's come to be called "landscape-level management"—a large-scale, long-term, integrated approach to the forest, a planning process that coordinates everything done at every level, from the watershed down to the stream reach, over time spans of rotation length or longer.

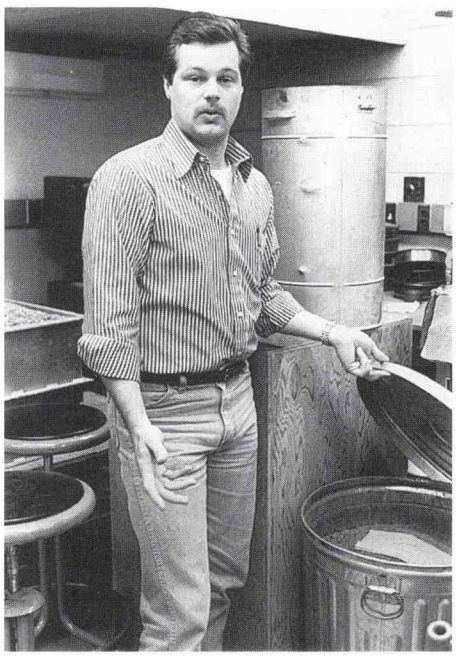
Such an approach has obvious benefits—the promise of harmonizing apparently conflicting claims on the forest, such as timber harvest and wildlife habitat, for example. But the difficulties are also obvious, especially when applying landscape-level management at the most localized scale. Gathering and processing the volumes of data needed and keeping track of all the spatial relationships on the forest over time have been the main logistical difficulties.

Now, a computer model developed by Forest Engineering professor John Sessions and his son, Bren, makes it possible to fine-tune a landscape-level management strategy—and brings this capability within the reach of any forest manager with a personal computer.

The model, called SNAP II (Scheduling and Network Analysis Program), can handle a watershed-sized stretch of forest (between 10,000 and 15,000 acres) divided into as many as 1,000 management units of between 10 and 60 acres each, with up to 50 attributes for each unit (for example, soil type, elevation, slope, aspect, site class, and visual quality).

Other pertinent characteristics of the watershed are entered—where the roads (both existing and potential) are, where the streams are, what wildlife habitat features are important, where the markets are and what prices they're paying, and the initial seral stage of vegetation for each unit.

Then the planner poses a problem: How can I harvest X board feet of timber over X years from this watershed, in the most profitable manner, while at the same time keeping the streams healthy, maintaining sufficient corridors and cover for wildlife, and keeping visual buffers alongside the main highways?



Sifting the sand—and the gravel, twigs, and other stuff. *Rob Gill's sediment study may eventually contribute to a restored sockeye salmon habitat.*

SNAP II develops a solution by scheduling projects period by period—up to four periods of, say, five to ten years each—and keeping track of changes over time. "It develops a schedule that maintains all the needed connections," says John Sessions, "and graphically displays the results" on the computer screen.

SNAP II was designed to complement the broader-scope FORPLAN, the Forest Service's strategic forest planning model. Released in 1990, SNAP II is already being used on more than 15 national forests, including the Wallowa-Whitman and the Umatilla. About 350 planners from agencies and industry have been trained in using the software.

Solving problems together

The problems of the east-side forests are huge—too big for any single agency to tackle alone. Blue Mountains Natural Resources Institute, based in LaGrande, was formed in 1991 to help coordinate research and management efforts directed at solving the east side's forest health problems. The Genesis study is one of several being handled by the Institute. "Our mission," says director Tom Quigley, "is to enhance the long-term economic and social benefits that come from the area's natural resources, and to do that in an environmentally sensitive way."

More than 60 agencies, organizations, firms, and governments—ranging from 1,000 Friends of Oregon to the Oregon Society of American Foresters to Oregon Women for Timber—are cooperators in the Blue Mountains Institute. OSU College of Forestry is a cooperator, and Dean George Brown sits on the Institute's board of directors.

"Often," says Brown, "people don't think of (the College of Forestry) as an east-side College. The perception is that we focus on west-side ecosystems and forests. This forest health crisis is giving us an opportunity to expand that involvement, but in fact we have a long history of attention to east-side issues and concerns." ■

No instant answers

IT'S TAKEN A LONG TIME FOR THE forests of eastern Oregon to get as sick as they are, foresters say. But thanks to research by OSU scientists and others, the tools are there to begin to bring them back to health. "The idea that we can fix this overnight is unrealistic," says Bob Messinger, timber lands manager for Boise Cascade Co. in LaGrande and a director of the Blue Mountains Natural Resources Institute, a cooperative research organization dealing with east-side ecosystem concerns (please see accompanying article). "But if we can keep the trees alive long enough to survive the insect infestations, then we have a chance of changing the species composition on some lands over time. We need to continue active management—we can't just wait for nature to take its course."

The forests of the future. *A pine seedling emerges amid debris from insect-eaten Douglas-fir and true firs.*

Extension agent Fitzgerald agrees. "We've altered nature, and it's out of synch. The idea is to manage actively to bring the forests back to some semblance of what they were 100 years ago." ■

Fooling beetles with pheromones

Entomologist Ross lures the pesky insects with their own perfume

The spruce budworm may be the best-known villain in eastern Oregon's forests, but bark beetles are the real killers. These pests move into stands of Douglas-fir and true fir and deal the *coup de grâce* to trees weakened by spruce budworm defoliation. "Many of those trees might survive if it weren't for the beetles," says Darrell Ross.

Ross, an OSU Forest Science assistant professor, is developing ways to foil one important species of these destructive insects by using synthetic versions of their own chemical attractants and repellents, called pheromones, against them.

Depending on how quickly these synthesized chemicals can clear regulatory hurdles (they must pass the same safety tests as chemical pesticides), they could be available for use within the next several years, Ross says.

Douglas-fir beetles use pheromones to attack trees in a complex and delicately timed strategy. The beetles must reproduce in dead Douglas-firs, for their larvae can't survive in a living tree. The female, the primary attacker, settles in a Douglas-fir and emits a mixture of pheromone chemicals that attracts many, many more beetles—both males and other females. The result is a massive and fatal attack on the tree.

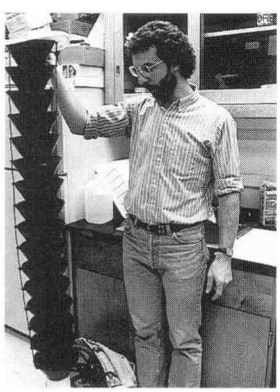
After the females mate, they begin emitting a repellent pheromone. In a wondrous bit of evolved survival strategy, the mass attack stops at just the right time: there are enough beetles to knock out the tree's defenses, but not so many that the larvae suffer undue competition for food.

Ross is testing synthetic pheromones on forested plots north of Enterprise near Hells Canyon, trying to route the beetles away from trees and into traps. One experiment shows much promise in protecting small, high-value areas, such as parks.

Ross stapled packets of the synthesized version of the repellent chemical, called MCH, to trees around the perimeter of six study plots of one hectare (2-1/2 acres) each. Then he ringed each plot with traps containing a mix of the several attractant chemicals. "This is called a push-pull strategy," he says. "We push them out of the area we want to protect and pull them into the traps." Results were positive; mortality from beetles was significantly reduced in treated plots compared to check plots.

Results of another study, aimed at protecting larger areas, are less conclusive but also promising. Ross put traps containing attractant throughout three study plots of one section (a square mile) each. "We caught a lot of bark beetles," he says, "but we also collected some checkered beetles," which are predators of the bark beetles.

It's too soon to tell whether it's better to trap bark beetles and predators both, or leave them and let the predators do their work. More-selective traps could possibly be devised to exclude the checkered beetles, says Ross. Or it may be possible to tinker with the pheromone blend to achieve selectivity: "The checkered beetles may be keying on a different component of the chemical mix."



A push-pull strategy. *Darrell Ross with spruce budworm trap.*

Ross's research is a cooperative effort with Forest Service entomologists. ■

He's a man of many hats

Forestry Extension Agent Paul Oester stays on the move in northeastern Oregon

Paul Oester's job covers a lot of territory—in more ways than one. Oester is the OSU Forestry Extension agent based in LaGrande. His bailiwick of Baker, Morrow, Umatilla, Union, and Wallowa Counties comprises more acreage than some Eastern Seaboard states.

But it takes more than a sturdy pickup truck to be a Forestry Extension agent in eastern Oregon. It also takes a flexible temperament and a well-rounded set of skills. Oester is a teacher, management consultant, reporter, writer, and friend to his farmer-rancher clients on Oregon's dry side.

Oester has several other research projects going besides the Hall Ranch weed-control study. They involve studies of different regimes of thinning, pruning, and control of competing grass and shrubs in conifer stands.

He's helped put together a tree-marking workshop for small-woodland owners and foresters, showing how to achieve various silvicultural goals through judicious selection of trees for harvesting or thinning. He and his colleagues Bill Emmingham, Extension silviculture specialist (and OSU Forest Science professor) and Steve Fitzgerald, OSU Forestry Extension agent based in Redmond, have presented the workshop to more than 80 foresters and landowners so far.

Oester writes and publishes a regular newsletter that reaches clients within his own territory plus some readers in Grant and Wheeler Counties. In another publication, the *Log Market Report*, he provides a periodic update on log prices. And he, Emmingham, Fitzgerald, and others recently wrote and produced an Extension bulletin on forest health in eastern Oregon. The bulletin is aimed at legislators and policymakers—a broadening of Forestry Extension's traditional audience.

Oester trains Master Woodland Managers, forest landowners who take a year-long Extension course in practical forestry techniques and then use their special training to help other woodland owners.

All these activities help him fulfill the primary mission of Forestry Extension—to help forest owners manage their lands in a planned, orderly, profitable, and environmentally sound way.

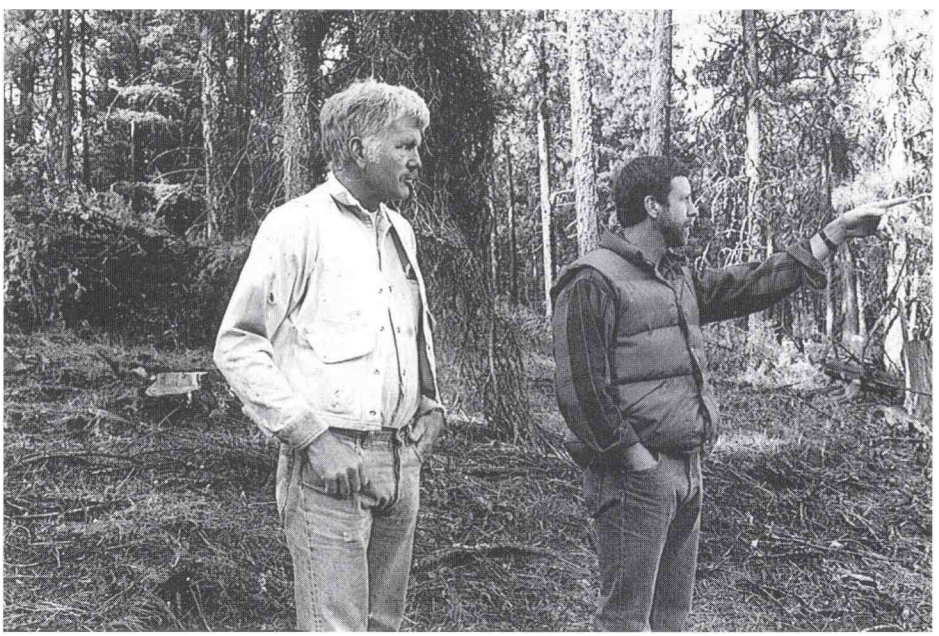
This mission has become particularly urgent in the onslaught of insects, disease, and drought into the forests of the east side. "We have such extensive acreage impacted by budworm, and then by bark beetles and drought, that harvest is proceeding rapidly," he says. "Sometimes it's well managed, and sometimes it isn't. We want to reach (landowners) with the information we have, so they can make better decisions both before and after harvest."

One client who's making good decisions is Ted Brown, a retired education professor at Eastern Oregon State College in LaGrande. Brown and his wife Mary own 740 acres of second-growth mixed pine and fir near Medical Springs in Union County.

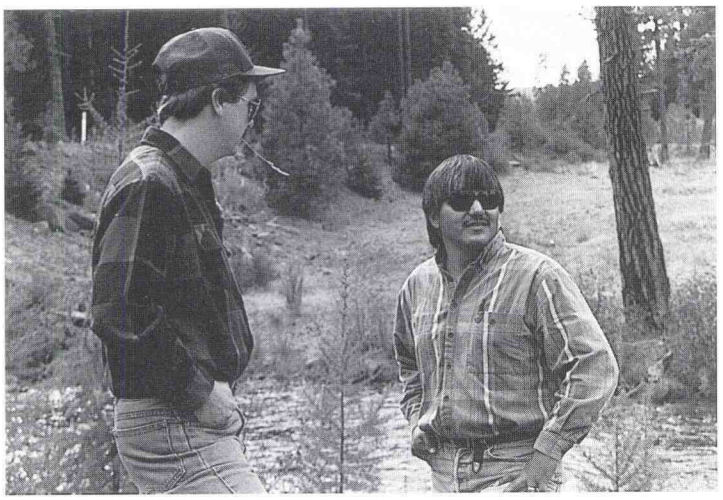
Here, as everywhere on the east side, the insects moved in fast. "I first noticed some budworm damage in 1989," says Brown. "In 1990, we were hit hard, and in 1991 we had 45 devastated acres."

Nevertheless, Brown is determined not to clear-cut any of his forest. Rather, he is selectively logging and thinning the damaged grand fir and Douglas-fir, leaving the healthy pine and larch to become the foundation of a new forest. "I've taken out 80 loads of logs from that 45-acre tract," Brown says, "and we still have a forest there." This year Brown plans to interplant the thinned forest with site-proven pine seedlings.

Oester would like all forest landowners to approach harvest in the same thoughtful way—not necessarily doing exactly what Brown is doing, but educating themselves about forest management and then thinking through their silvicultural options. "Marking trees, where appropriate, is a good tool," Oester says. "It's a good way to communicate with your contractors, so you know you're getting what you want. And then, whether you do the work yourself or hire somebody to do it, you have more control over the outcome." ■



Helping forest owners manage their lands. *Union County landowner Ted Brown (left) and Paul Oester tour Brown's woods.*



Strenthening ties. *Tribal resource specialists Chris Gannon (left) and Bob Brunoe at the Warm Springs River. Below, Dean George Brown examines a mixed-conifer forest on the reservation.*

A fruitful relationship

Warm Springs visit helps strengthen ties between OSU and Warm Springs Tribes

Dean George Brown and 19 other College of Forestry professors took a two-day tour of the Warm Springs Indian Reservation in mid-September. The visit was the first fruit of a new cooperative agreement among OSU, the Bureau of Indian Affairs, and the Confederated Tribes, a pact that continues a long tradition of cooperation between OSU and the Warm Springs Indians.

Under the agreement, the three cooperators will work together to solve problems of forest management and wood-products manufacturing on the 641,000-acre reservation.

Faculty from all four College of Forestry departments visited several sites in the timbered area on the west side of the reservation. They also visited the Warm Springs Forest Products small-log mill, owned and operated by the Tribes, and took a guided tour of the Warm Springs Museum—so new it wasn't even open to the public at the time. The museum displays the history and culture of the Warm Springs, Wasco, and Paiute Indians, the three tribes that make up the Warm Springs Confederation.

The University has had a research and extension relationship with the Warm Springs Confederated Tribes since the late 1950s, according to Charles "Jody" Calica, natural resources manager for the Tribes. And the College of Forestry, he says, has always been an important part that relationship. "We're trying to get better at managing our natural resources, and we look to OSU to help us. What's the latest thinking on natural resource issues? How should we address long-term productivity? What is the research saying about forest resources? These are the kinds of questions we have."

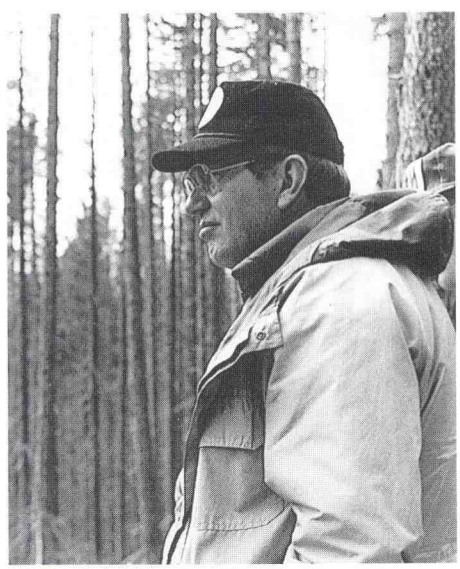
The new research agreement, says Dean Brown, "formalizes an existing set of relationships that have developed over the years." Several College faculty have worked with the Warm Springs tribes in the recent past. When Warm Springs Forest Products began streamlining its operations and its management a few years ago, Terry Brown, Forest Products professor, was asked to help. When the Tribal Council adopted a new resource management plan calling for a reduction in timber harvest and the institution of long-term, conservation-oriented practices, Norm Johnson, economist and Forest Resources professor, helped verify the computations and assumptions in the plan. And the Warm Springs Tribes are members of the Nursery Technology Cooperative, a College of Forestry research co-op that conducts research on tree nursery practices. The co-op is led by Forest Science associate professor Robin Rose.

The Tribes are interested in exploring other cooperative projects, Calica says. Among them: landscape-level management using remote-sensing data, production of forage for cattle, and ways to encourage huckleberries, a traditional Indian food, to grow in forest clearings.

For their part, College faculty welcome the new research opportunities. "The Warm Springs Reservation is a natural laboratory," says Steve Fitzgerald, OSU Forestry Extension agent based in Redmond, whose territory includes the reservation. "From the juniper and sagebrush in the east all the way up to the crest of the Cascades, you've got the whole gamut of vegetation, from hot and dry to cool and moist."

Steve Tesch, Forest Resources associate professor and silviculturist, is already planning a series of studies on thinning of maturing, second-growth, mixed-conifer stands often dominated by noble fir. "The Tribes are interested in alternatives to simply clearcutting the stands and starting over," Tesch says. "They want to explore options for putting high-quality wood on the remaining trees and improving their vigor against pests, while supplying timber to their small-log mill. Not much is known about the response of noble fir to thinning treatments; this is a first step."

Says Dean Brown, "We see this as a great opportunity both to conduct research on the east side and to contribute in any way we can to the resource management needs on the Warm Springs Reservation. We're grateful for the opportunity to work with the Confederated Tribes." ■



FACULTY FEATURE

'What does the *research* say?'

Hank Froehlich inspires their curiosity, say his students—several of whom came back to honor their distinguished mentor.

Hank Froehlich was a forester before he became a professor, but he has always been a scientist. When faced with other people's conventional wisdom, opinion, speculation, or prejudice, Froehlich's reply is likely to be, "What does the research say?"

Froehlich retired last year after a career rich with research, but he hasn't lost his conviction that you have to try things and observe the results before you form an opinion. "I tell my students, if you don't agree with me, that's okay—but understand that it's not me talking," he says. "What does the re*search* say? They probably get sick of hearing me say that."

On the contrary, Froehlich's own quest for knowledge is infectious, according to Dale McGreer, resource hydrologist for the Potlatch Corp. and a former graduate student of Froehlich's. "He inspires in his students an untiring curiosity." McGreer was a speaker at a conference held at OSU last November to celebrate Froehlich's 22 years of research and teaching at the College of Forestry. The conference, Forest Soils and Riparian Zone Management, drew almost 100 colleagues, former students, and admirers.

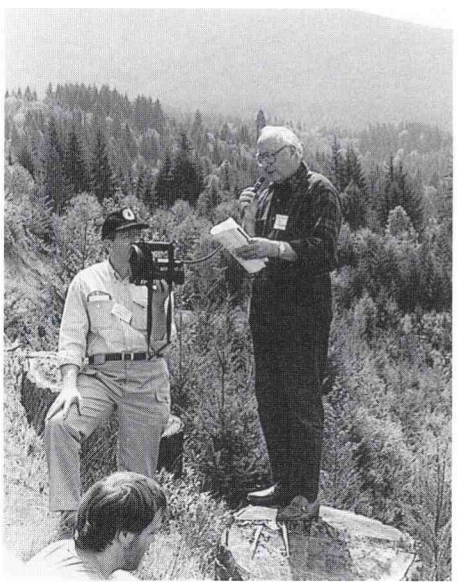
Forest Engineering department head Bill Atkinson commends Froehlich's commitment to letting the studies tell the story. "Never one to be swayed by current scientific and political fads," Atkinson wrote, "Hank always demands solid science instead of opinion." The comment came in a letter nominating Froehlich for the Oregon Society of American Foresters 1992 Lifetime Achievement Award—an honor he received at the OSAF's annual convention in April.

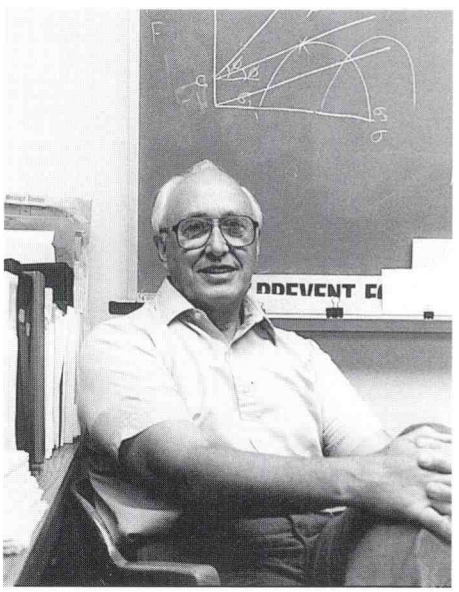
Froehlich's own research has challenged conventional wisdom more than once. His study of woody debris in streams helped foresters understand its importance in making a healthy habitat for fish. Today the wood is left in place rather than taken out. His work has contributed to successive improvements in state forest practice rules, particularly with respect to the compaction of soils and the treatment of streamside areas.

Starting in the woods.

Froehlich fought forest fires as a teen-ager on the Rogue River National Forest, and after high school and a couple of years in the Army he went to work for Coos Bay Timber Co. in logging engineering. After earning his degree in logging engineering at Oregon State in 1952, he worked for several Northern California timber companies.

He got into teaching when he participated with a group of foresters who'd been asked to develop the new forestry program at Humboldt State College. That done, he stayed on as a teacher.





A scientist always. *Hank Froehlich in the field (giving a talk at the 1992 Fernhopper Day tour of Starker Forests) and in the office.*

In 1964 Froehlich was chosen from among several applicants for a full scholarship to Yale. With his wife, Joan, and their four children, Froehlich moved to New Haven to study forest soils. After earning his master's there, he decided to go on for a doctorate at Colorado State, studying forest hydrology and soil physics.

In 1970, a year after he was hired by the Bureau of Land Management's Portland office, Froehlich was recruited by Carl Stoltenberg, then Dean of the College of Forestry, to teach and conduct research in the Forest Engineering department.

Froehlich taught graduate courses in hydrology and soils and conducted the portions of the Forest Engineering Institute workshops dealing with those topics. He helped draft the first major rewrite of state forest practice rules in 1970, and worked with state inspectors to help them learn the "why" of soil and stream protection.

During his tenure here, he has advised perhaps 60 graduate students and has served on graduate committees for many more, including students in wildlife, range, and agriculture. "I've been blessed with fantastic students," he says. ■

ALUMNI FEATURE

Committed to diversity

. . . and not just in the woods

In several ways, Lynn Burditt exemplifies the changing face of the Forest Service. She's young (37), female, and committed to fostering diversity both in the woods and in the work force.

Burditt is the first woman ranger on the Blue River Ranger District of the Willamette National Forest—and

"the first woman" a lot of other things, too. But her mission goes beyond that of being a pioneer. Even as the Forest Service embraces biodiversity as an ideal of forest management, Burditt embraces the ideal of a culturally diverse Forest Service work force. "Fostering diversity is an important part of a ranger's role," says Burditt. "I believe I have a responsibility to help make those changes."

Since 1989 Burditt has been ranger in one of the Forest Service's most interesting and high-profile venues. The Blue River Ranger District is situated on a forest rich in both recreation opportunities and timber, the focus of much controversy over logging. Blue River hosts two important research organizations, the Andrews Experimental Forest and the Cascade Center for Ecosystem Management, and it is the site of some controversial ecosystem management efforts.

Burditt is good at maintaining harmony between her management staff and the research community in their midst, says Art McKee, director of the Andrews Experimental Forest. "Lynn has been really good at getting her regular staff people to accept that there is a research presence not only on the Experimental Forest itself but beyond it. She's been an excellent spokesperson for the research community, helping us facilitate research on a really large, landscape scale."

Burditt's consensus-building style deserves much credit for this smooth relationship, says Fred Swanson, a project leader at the Andrews. "She doesn't react in kind when somebody starts getting excited. Instead, she's constantly helping each of us see things from a broader point of view."

More than a pioneer. *For Lynn Burditt, being "the first woman" is only the beginning.*

Credibility first.

Burditt chooses to earn the respect of her colleagues through credibility rather than confrontation. "When I started out," she says, "being young and female in the Forest Service, I felt challenged to establish my credibility. I was a little naive at first about what that might invite—I didn't really understand the more subtle forms of discrimination. And in a way that worked to my advantage, because I could overlook some things people said or did." In short, she decided to sidestep a showdown in favor of a more gradual strategy.

"I had to think through my long-term objectives. I wanted to establish credibility first, and then educate people about the value of diversity and its benefits to our communities and our organization."

A native of Tennessee, Burditt grew up loving the out-of-doors. She was educated at the State University of New York at Syracuse and Iowa State University, where she took a degree in recreation resource management and forest management.

She worked in presale planning for the Forest Service on the Clearwater National Forest in Idaho, was promoted to logging systems specialist, and then was accepted into the Forest Service's two-year Advanced Technical Training program in forest engineering, based at the OSU College of Forestry. She earned a Master of Forestry while she was here, receiving her degree in 1982. During 1981 she worked on the Mt. St. Helens volcano recovery effort.

She was hired as a logging engineer on the Flathead National Forest in Montana. She spent almost nine years on the Flathead, moving up through another timber management staff position to become acting district ranger on the Hungry Horse Ranger District and then district ranger on the Tally Lake Ranger District.

At every level, she encountered not only the challenges of being "the first woman," but the challenges faced by Forest Service managers everywhere—controversy rooted in conflicting public views about the role of timber harvest amid the other resources of the forest.

"The job at Big Fork (as timber management assistant for the Swan Lake Ranger District) was one of the most challenging I ever had," she says. That district takes in the Flathead Valley, a place of remote grandeur, grizzly bears, and spectacular views.

Timber sale planning in such an environment took place under constant—and sometimes hostile—public scrutiny. "It was a real learning experience, striving to consider people's values and concerns and still follow the (forest) plan. It was my first real exposure to dealing with people who were unhappy with us."

Two promotions later, as ranger on the Tally Lake district, Burditt got a chance to address a related challenge: public education. A ski area was located on the district, within grizzly bear habitat. Burditt and her staff developed a resource education program that included information

on grizzly bears, and she enlisted financial support from the ski area concessionaire to help fund an interpreter's position. "The program was very successful, and it's still going strong," she says.

An interest in research.

She especially relishes her interaction with the research community on the Blue River—forest scientists and managers from OSU, the Forest Service's PNW Station, and other agencies. Because of its close ties to research, the Blue River district plays a key role in applying new scientific information, and there are many demonstrations of stand-level management in place. "Some people feel that we are implementing unproven methods," Burditt says, "of putting experiments on the ground before they're ready. To some degree that's true. However, given the questions related to ecosystem management, we feel the need to move forward and develop innovative methods."

The Forest Service is striving to be more responsive to the public, and yet there is still a communication gap, Burditt believes. "This is the biggest challenge that faces our profession today—communicating with people in terms that are both technically accurate and meaningful to a lay person . . . I don't think many people in society understand the tradeoffs and implications in managing forests different ways."

To that end, Burditt is stressing education and interpretation on the Blue River district. Along with the research community, she invites students, managers, policymakers, legislators, and ordinary people to come in and tour the forest. About 1,200 people a year do so; visitors have included most of the Northwest's congressional delegation as well as senators and representatives from back East.

As district ranger, Burditt is committed not only to forest resources, but to human resources. Embracing diversity—not just tolerating it—is crucial, she believes, to this country's ability to function in the next century. "We need to let every person achieve his or her fullest potential, and only then can our society achieve its fullest potential." Burditt is a member of the Lane County human rights-affirmative action advisory committee, and she served as program committee chair for the sixth annual conference of the Northwest Coalition against Malicious Harrassment.

Kudos for faculty

K. Norman Johnson, professor of forest resources, received the 1992 Conservationist of the Year Award from the Oregon Rivers Council. He was honored for his contribution to responsible management of Northwest forests and fisheries as a membership of the scientific panel on late-successional forest ecosystems. He received the award in November of 1992.

Richard K. Hermann, professor emeritus of forest resources, was named an Honorary Member of the International Union of Forestry Research Organizations (IUFRO) at the its centennial celebration in Berlin and at a division meeting in Nancy, France, last year. Membership in the organization is usually held by institutions; rarely it is bestowed on individuals who have made exceptional contributions to IUFRO.

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