Sources *and* Science

A Media Guide to the Pacific Northwest Research Station

USDA United States Department of Agriculture
Forest Service
PNW Pacific Northwest Research Station

Welcome: A message from the Station Director

Tom Quigley

The Pacific Northwest (PNW) Research Station provides land managers, policymakers, educators and citizens with information on forest-related issues. Our staff of research scientists and professionals works to fulfill the Station's mission of generating and communicating knowledge to help people understand and make informed decisions about natural resources and the environment.

We invite you to use this guide as you develop stories and, ultimately, help people understand the environment and their role in it.

Thomas M. Quigley
Station Director

Contents

PNW Research Station Facts

- Established in 1923
- One of six research stations in the U.S. Department of Agriculture, Forest Service
- Headquarters in Portland, Oregon
- Ten laboratories in Alaska, Oregon, and Washington
- Ten active experimental areas (watershed, range, and forests)
- Research also conducted in more than 20 research natural areas
- More than 500 employees

How to Use This Guide

For over 80 years, journalists have called upon PNW Research Station scientists as sources for reliable and objective information for their news stories. More than 80 scientists with various areas of expertise currently conduct research for the Station. More than 30 of them are profiled in this guide. For a complete listing of the Station's scientists and their areas of expertise, visit http://www.fs.fed.us/pnw.

To facilitate ease of use, the guide is divided into four broad categories based on the scientists' areas of expertise: forests and plants, fire and air, wildlife and aquatics, and economics and social research. Two indexes—one by scientist and the other by subject—are offered at the back of the guide to help locate more specific information.

How to Reach Us

Our Station's public affairs specialist can help put you in touch with the right scientist for your story:

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Visit us on the Web at **http://www.fs.fed.us/pnw**

Ralph Alig, Ph.D.

Research forester, Land Use and Land Cover Dynamics team, Corvallis Forestry Sciences Laboratory

What do timber supply, wildlife habitat, global change and conservation programs all have in common? If you'd pose this question to Ralph Alig, he'd probably tell you that they are all issues surrounding natural resource management that his research has impacted.

A research forester and leader of the Land Use and Land Cover Dynamics team at the Forestry Sciences Laboratory in Corvallis, Ore., Alig has studied the dynamics of land use and land cover changes for more than 25 years. Much of his research involves analyzing the changing landscape across ownerships from socioeconomic and demographic perspectives. His work is currently focused on developing methods for analyzing the relationships between socioeconomic forces and area changes and improving methods that predict area changes in land uses and land covers.

Science findings stemming from his work have not only been applied in policy analyses involving timber, wildlife, global change and conservation, they also have been used to develop a network of area change models for linkage to other natural resource models for use in national natural resource assessments.

Background

Ph.D., land economics, Oregon State University; National Coordinator for Land Use and Land Cover Projections, USDA Forest Service Renewable Resources Planning Act team

Ask Him About

Land use, urban growth, land use models, national land use change, land policies, Renewable Resources Planning Act.

Paul D. Anderson, Ph.D.

Research forester, Biology and Culture of Forest Plants team, Corvallis Forestry Sciences Laboratory

For Paul Anderson, now is a great time to be involved in silvicultural research in the Pacific Northwest. The diversity of this region's ecosystems, coupled with a growing awareness of ecological processes and constraints underlying our forests and an increasingly articulate statement of society's expectations for forests, means that opportunities for the development of ecologically sound forest management techniques abound.

Anderson is a research forester and leader of the Biology and Culture of Forest Plants team at the Forestry Sciences Laboratory in Corvallis, Ore. His research is currently focused on the development of silvicultural systems that promote ecosystem integrity and, at the same time, produce a wide variety of ecological, economic and other social benefits. By using his knowledge of disciplines such as plant physiology, ecology and genetics, Anderson is able to better understand how forest manipulations—such as thinning and natural disturbances—impact forest development.

In the future, Anderson plans to continue contributing to the development of management tools that help society meet its forest values expectations by combining fundamental knowledge of plant biology and community ecology with management systems.

Background

Ph.D., physiological ecology and silviculture, University of California, Berkeley; member, Society of American Foresters, California Forest Soils Council

Ask Him About

Silviculture, ecosystem restoration, ecology, climate change.

Jamie Barbour, Ph.D.

Forest products technologist, Focused Science Delivery Program, Portland Forestry Sciences Laboratory

Growing up in southern New Jersey in a suburb of Philadelphia, Jamie Barbour remembers how spending his summers in his parents' cabin in the Warton State Forest whetted his interest in natural systems and how living a dual existence in both urban and rural worlds exposed him to the dynamics of a changing landscape and the subsequent natural resource issues that emerge.

Now Barbour is a forest products technologist and manager of the Focused Science Delivery Program—a program whose mission it is to make existing scientific information meaningful to policy-makers, land and forest managers and the public—and he carries with him an awareness of this dynamic in his work.

Barbour's research has focused on resource management, wood utilization and mapping systems. He has worked toward an understanding of the interactions of wood characteristics and economics. This knowledge improves managers' ability to decide when use of timber sales is an appropriate way to achieve non-timber objectives in forest management. Barbour has also worked on developing techniques to conduct research on integrated resource management. This has helped provide tools, methods and procedures that assist managers to evaluate the trade-offs among various resource objectives. He has also coordinated efforts to use national maps and other geographic information to answer questions about resource allocation and develop reporting systems that determine if those places most in need of economic assistance are, in fact, receiving it.

In the future, Barbour plans to further the mission of his program by developing techniques to make existing science meaningful and useful to those who set forest policy, those who implement forest policy and those who seek to influence forest policies.

Background

Ph.D., wood and fiber science, University of Washington; member, Forest Products Society; Chair, International Union of Forest Research Organizations, Division 5 Research Group on Sustainable Production of Forest Products

Ask Him About

Wood utilization, integrated resource management, application of geographic information systems, science communication.

Robert L. Deal, Ph.D.

Research silviculturist, Sustainable Wood Production Issue team, Portland Forestry Sciences Laboratory

Although Robert Deal grew up in the Pacific Northwest—he spent his youth in the Puget Sound region—his real appreciation for the temperate rain forests that characterize much of the western half of the region came from working as a professional forester in coastal southeast Alaska for almost 20 years.

Deal is a research silviculturist and leader of the Sustainable Wood Production Issue team at the Forestry Sciences Laboratory in Portland, Ore. His research is focused on applying silviculture—or the branch of forestry concerned with growing trees—to address a variety of forest resource objectives, including wood production and wildlife and aquatic resources enhancement.

In one study, Deal developed silvicultural systems based on partial cutting for the western hemlock-Sitka spruce forest types. These systems have been used by forest managers to prescribe silvicultural systems other than clearcutting in the coastal rain forests of southeast Alaska. He has also focused on the dynamics of mixed red alder-conifer stands. This research has shown that red alder—a deciduous hardwood tree species common throughout much of the region—can be important for enhancing biodiversity in young stands. Deal's recent focus has been on synthesizing economic, social and ecological information that is important for sustainable forestry in the Pacific Northwest.

In the future, Deal, who has been with the Station since 1979, plans to continue to use silviculture to aid in understanding how we can use forest management practices to provide wood and enhance wildlife and aquatic resources.

Background

Ph.D., forest resources, Oregon State University; C.F. (certified forester); member, Society of American Foresters, International Union of Forest Research Organizations; Chair, Portland Chapter of the Society of American Foresters; Chair-elect, National Silviculture Working Group, Society of American Foresters

Ask Him About

Sustainable wood production, silviculture to enhance wildlife and aquatic resources, stand dynamics, stand reconstruction.

Jeremy S. Fried, Ph.D.

Research forester, Environmental Analysis and Research team, Portland Forestry Sciences Laboratory

You might just say that Jeremy Fried was born to be a scientist. From an early age, he exhibited a curiosity about the natural world around him, a determination to accomplish what he set out to do, and a knack for problem identification and solving. He still exhibits these same characteristics and now uses them to address important natural resource issues.

Fried is a research forester and leader of the Environmental Analysis and Research team at the Forestry Sciences Laboratory in Portland, Ore. Although his research projects are broadly based, all are focused on applying systems analysis techniques to contemporary natural resource management issues. In one study, Fried developed the California Fire Economics Simulator—a model now used throughout California to evaluate the effects of changes in the configuration of initial attack on wildland fire. In another study, he developed the Forest Inventory and Analysis BioSum model, which assesses the feasibility of fuel treatments at the landscape scale and identifies opportunities for locating processing sites for small-diameter wood. Fried has also evaluated the effects of climate change on the success of wildland fire management in California.

In the future, Fried plans to continue to pursue policy-relevant, issue-driven and hypothesis-based research that is founded on forest inventory data and that addresses the complex problems surrounding natural resources.

Background

Ph.D., wildland resource science, University of California, Berkeley; member, Society of American Foresters; Chair, Lake Oswego Forestry Commission; Chair-elect, Geographic Information Systems working group, Society of American Foresters; Associate Editor, International Journal of Wildland Fire

Ask Him About

Forest inventory, fire management, ecology, geographic information science, climate change impact assessment, natural resource policy, models of social acceptance of fire and fuels management.

Miles A. Hemstrom, Ph.D.

Research ecologist, Eastside Forest Health Restoration team, Portland Forestry Sciences Laboratory

Miles Hemstrom knows the Pacific Northwest. He has been an ecologist in the region for over 20 years—first as an area ecologist and regional ecologist with the National Forest System and now as a research ecologist at the Forestry Sciences Laboratory in Portland, Ore.

The focus of Hemstrom's early research was on the plant communities, disturbance history and environments in forest ecosystems west of the Cascade Mountains. Much of the emphasis of this work was on providing field managers with tools to recognize different environments and plant communities and to understand the implications of their management activities.

His current research focus is on landscape ecology. He works with silviculturists, rangeland managers, ecologists and other researchers to build models that combine a wide variety of vegetation types, management activities and disturbances into landscape simulations. A substantial portion of this research involves nonnative invasive plants and their reactions to environment, disturbance and management.

Because most of Hemstrom's research is applied science, it is focused on producing tools useful to land managers and those interested in the effects of land management activities.

Background

Ph.D., plant ecology, Oregon State University

Ask Him About

Landscape simulations, fire, invasive plants, plant communities of the Pacific Northwest, natural resource management.

Paul Hennon, Ph.D.

Research plant pathologist, Behavioral Chemistry and Ecology of Insects and Disease team, Juneau Forestry Sciences Laboratory

Many researchers in the Pacific Northwest are fascinated by the ecological roles trees serve in our region's ecosystems. Others are concerned with the commercial role they serve in our region's economy. Paul Hennon, a research plant pathologist at the Forestry Sciences Laboratory in Juneau, Alaska, is interested in both of these functions—but he's more interested in how both of them play out among dead trees.

Hennon's research is primarily focused on the dynamics of tree decline and dead wood in southeast Alaska. He is examining the influence of soil chemistry, soil temperature and water as potential causes of decline and death of yellow-cedar. He also is looking more broadly at how tree death contributes to the structure of forests and what ecological and commercial roles dead trees and dead wood serve in both yellow-cedar and western hemlock forests.

By using his science findings, Hennon has been able to determine patterns of tree death in old-growth forests in southeast Alaska, describe the factors surrounding yellow-cedar decline, and provide forest managers with silvicultural tools for manipulating wood decay and dwarf mistletoe—a parasitic plant—to desirable levels.

Hennon, who has worked at the Juneau laboratory since 1981, sees his research as important to improving multiple-resource management of southeast Alaska's forests. He also sees his research as helping to develop a basic understanding of how the forests of the region have developed and how they likely will function and change with—or without—various management regimes.

A self-described "Curious George," Hennon enjoys balancing the intellectual and physical challenges of conducting scientific research in the remote forests of Alaska and collaborating with other scientists and researchers.

Background

Ph.D., forest pathology, Oregon State University; member, American Phytopathological Society, Mycological Society of America, Northwest Scientific Association

Ask Him About

Dead trees, forest decline, old growth, southeast Alaska, forest structure, wood decay, multiple-resource management.

Susan Stevens Hummel, Ph.D.

Research forester, Ecologically Sustainable Production of Forest Resources team, Portland Forestry Sciences Laboratory

With a diverse background that includes working at La Selva Biological Station in Costa Rica and with the Wood Panel Association in Indonesia, Susan Stevens Hummel says she never stops asking questions. And in her field of scientific research, she's found the habit to be a useful one.

Hummel, a research forester at the Forestry Sciences Laboratory in Portland, Ore., focuses on how different stand and landscape structures influence the quality and quantity of forest resources that people want. She combines field research with computer modeling to understand the effects of management practices on forest resources over space and time. Hummel's research includes investigating the dynamics of mixed-species forests on the eastern slope of the Cascade Mountains, identifying trade-offs involved in managing forests for multiple resources and describing the effects of changing forest structures on fire behavior and wildlife habitat.

Hummel's future research will continue to address the effects of forest management practices on resources that people value—such as wood and water quality—and that the resources depend on—such as nutrient cycling.

With a personal philosophy of learning from history, being observant and balancing passion and objectivity, Hummel sees her research as important to the public because it helps clarify how the choices we make affect the forest resources we desire.

Background

Ph.D., forest resources, Oregon State University

Ask Her About

Forest management, silviculture, wood quality.

Ching-yan Li, Ph.D.

Research microbiologist, Sustainable Ecosystem Productivity team, Corvallis Forestry Sciences Laboratory

For Ching-yan Li, a research microbiologist at the Forestry Sciences Laboratory in Corvallis, Ore., unraveling the mysteries of the belowground processes that underpin forest productivity in the Pacific Northwest is like unraveling a massive root wad, a common site for the processes he studies; it is just as challenging, but much more rewarding.

Most of Li's research has focused on two key processes—nitrogen fixation, the process by which plants convert nitrogen from the air into a usable form, and the weathering of primary minerals, the process by which minerals are obtained as a result of natural chemical processes—and how they are interrelated. In one study, he found that red alder—the most common hardwood species in the Pacific Northwest—is able to dissolve basalt rock, thereby releasing nutrients available for uptake by trees and plants. In this way, alders are able to indirectly increase the organic matter content in soil by annual enrichment. This process plays an important role in the management of forest productivity and sustainability. Li also found that trees with nitrogen-fixing bacteria inside their roots might contribute to the restoration of damaged ecosystems and could be used in designing silvicultural systems that are nitrogen self-sufficient. This finding adds to the scientific basis for evaluating options for decision-making and for designing management regimes.

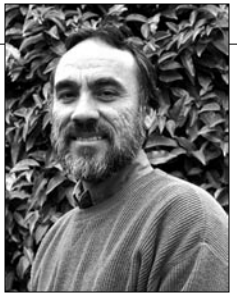
Because human activities have greatly degraded the health and productivity of western forest ecosystems, Li's research—which is aimed at identifying plant species that can support rapid soil weathering and associated nitrogen fixation—helps aid efforts to restore ecosystems to healthy states. His research also provides the information needed to evaluate management options and assess alternatives for sustainable resource use.

Background

Ph.D., soil microbiology, Oregon State University; Fulbright Scholar; member, American Association for the Advancement of Science, American Society for Microbiology, Mycological Society of America

Ask Him About

Nitrogen fixation, rock weathering, microbial interactions, belowground processes, soil weathering.



Randy Molina, Ph.D.

Research botanist, Forest Mycology team, Corvallis Forestry Sciences Laboratory

Randy Molina, a research botanist at the Forestry Sciences Laboratory in Corvallis, Ore., studies fungi. Not just the kind that end up on the plates of discerning gourmets, but the kind that form important relationships— or symbioses—with tree species in Pacific Northwest forests.

Molina's research has shown mycorrhizal fungi that grow on the roots of certain tree species in the region actually act as a sort of network that connects the roots of the trees to those of shrubs and seedlings. The fungi also facilitate the transfer of carbon and, perhaps, other nutrients. Molina has also found that some species of truffles and mushrooms form symbiotic relationships with a wide range of trees, whereas others are very specific. This finding demonstrates the importance of maintaining certain host trees during forest management activities in order to maintain fungal diversity.

Molina's research has also focused on edible mushrooms. He found that the productivity of commercially harvested edible forest mushrooms in the Pacific Northwest—which bring millions of dollars to forest communities in the region—is affected by a variety of factors including forest habitat; forest age; and disturbances, such as fires and disease outbreaks. This finding shows that active forest management and monitoring aimed at maintaining the species' habitats are key to ensuring their sustainability.

Molina, who has been with the Station since 1974, would like to determine the relevance of individual fungal species in forest ecosystems and identify efficient management approaches to conserve rare and little-known fungi in the future.

He says the most rewarding part of his work is presenting the results of his research to students and the public. These presentations challenge him to "tell a story" that will not only be of interest to his audience, but will instill in them an appreciation of the complexity, function and beauty of forest fungi and their importance in maintaining the region's ecosystems.

Background

Ph.D., botany, Oregon State University

Ask Him About

Fungi (mushrooms), truffles, special forest products, commercial mushroom harvest, economic impact of mushroom harvest, edible forest mushrooms, biodiversity, conservation, Survey and Manage standards.

Stephen E. Reutebuch

Research forester, Silviculture and Forest Models team, Olympia Forestry Sciences Laboratory

Although some researchers look at forests from the ground up, Stephen Reutebuch uses a top-down approach to understand this region's forested landscapes. He studies them from a remote vantage point—the air—and uses aerial photographs and airborne laser scanning and radar to help him.

Reutebuch is a research forester and leader of the Silviculture and Forest Models Team at the Forestry Sciences Laboratory in Olympia, Wash., who has researched more efficient remote sensing methods for collecting spatial data since 1986.

In his early career, Reutebuch developed improved computerized methods for carrying out integrated, landscape-level harvest and transportation system design and planning for the Forest Service and other agencies. This research resulted in computer software systems that allow land managers to design harvest plans that are safer and more efficient and that reduce environmental impacts.

More recently, he conducted accuracy studies that continue to provide insight into the quality and reliability of commonly available digital elevation models (DEMs). He has also conducted accuracy research of emerging remote sensing technologies that promise to produce DEMs better than those previously available, allowing far better modeling of terrain in a wide range of applications.

In the future, Reutebuch plans to focus on developing improved remote sensing techniques for measuring vegetation structure and on continuing to contribute to a better understanding of how silvicultural practices influence forest development in the region.

Background

M.S., forest engineering, University of Washington; member, American Society for Photogrammetry and Remote Sensing

Ask Him About

Remote sensing, spatial data, aerial photography, airborne laser scanning, airborne radar, silviculture.

Jane E. Smith

Research botanist, Forest Mycology team, Corvallis Forestry Sciences Laboratory

For some, it may be common to look at a mushroom and see nothing more than a potentially edible capped stem growing on a stump or on the forest floor. For others, like Jane Smith, a research botanist at the Forestry Sciences Laboratory in Corvallis, Ore., however, it is possible to look more closely and see the important role fungi occupy in linking the above- and belowground components of forest communities.

Smith's research is focused on fungi and fungal diversity. In one study, she found that forests in the Cascade Range of Oregon provide for some of the greatest fungal diversity in the world, hosting more than 250 mycorrhizal species—those fungi that grow symbiotically on plant roots and help with nutrient uptake. Smith also found that all age classes of forests—young, rotation age and old growth—are important in the maintenance of the biological diversity of mycorrhizal fungi and the organisms they support. This finding has implications for wildlife planning and management and is critical to forest managers charged with making informed decisions about the effects of management activities on fungi and wildlife.

In another study, Smith found that logs provide suitable habitat for the conservation of a variety of fungal species. In addition to performing important ecosystem functions—such as storing water and nutrients—and providing habitat for a variety of wildlife species, logs also serve as hosts of fungi that form mutually beneficial associations with wildlife and trees. This finding is important to forest managers because it demonstrates one way in which a legacy structure—in this case, logs—provides for biodiversity.

In the future, Smith plans to explore the response of soil fungi to fire and their potential ability to selectively inhibit invasive plant species.

Background

Ph.D. candidate, botany and plant pathology, Oregon State University; member, Mycological Society of America, Native Plant Society of Oregon, North American Truffling Society, North American Mycological Association

Ask Her About

Forest fungi, fungal diversity, old-growth forests, belowground ecosystems, postfire fungi, fungal inhibition of non-native invasive plants.

Walt Thies, Ph.D.

Research plant pathologist, Behavioral Chemistry and Ecology of Insects and Disease team, Corvallis Forestry Sciences Laboratory

Although many urban residents probably wouldn't think twice about Walter Thies' research, he might suggest otherwise.

A research plant pathologist at the Forestry Sciences Laboratory in Corvallis, Ore., Thies has focused much of his work on root diseases—in particular, laminated root rot. Although the effects of this devastating disease—which can cause any conifer species' roots to literally rot away, making them topple—are usually seen in forests, the disease can occur anywhere the host trees grow, including urban areas. Management options in urban areas are similar to those in forest landscapes, but the potential for damage is usually more dramatic—and costly—in urban settings.

Thies' research, which has influenced and created new options for management of root diseases, has focused on three areas—determining the ecological role of the disease, developing disease management strategies to help achieve ecosystem objectives, and determining the effect of various treatments on the mortality of Douglas-fir seedlings from root disease.

By using his findings, Thies quantified growth reduction in Douglas-fir caused by root rot. This accomplishment provided forest managers with a tool to better estimate growth and volume in stands infected with the disease. Thies also described the diffuse nature of root rot distribution within stands. Knowledge of the disease's distribution is the first step in determining an effective strategy for its management.

Thies says the most rewarding part of his work is interacting with land managers and communicating his science findings to them. His future work will focus on concluding several long-term studies he has worked on throughout his career and archiving data so they will be accessible to future scientists and researchers.

Background

Ph.D., plant pathology, University of Wisconsin; member, American Phytopathological Society, Mycological Society of America, Society of American Foresters

Ask Him About

Root disease, laminated root rot, plant pathogens, ecological role of plant disease.

Willem van Hees

Research forester, Alaska Resources Analysis team, Anchorage Forestry Sciences Laboratory

One can't effectively manage—or sustainably use—forest products unless the character and quantity of those resources are known. This fact is what drives Willem van Hees, a research forester at the Forestry Sciences Laboratory in Anchorage, Alaska, in his work.

Van Hees is the leader of the Anchorage team of the Station's Forest Inventory and Analysis (FIA) Program. His team—like the FIA Program— is responsible for inventorying and assessing the region's ecosystems and their components. In one study, van Hees helped improve field data collection efficiency and precision by developing new forest-type designation decision rules for over 2,000 forested sample locations in southeast Alaska. These decision rules—which help identify forest types—sped up the inventory of forests and resulted in less time being spent on data processing and reconciliation. The general approach developed in the study will be applied to future inventory efforts by the FIA Program throughout Alaska.

In another study, van Hees and his colleagues developed and applied an innovative and extensive sampling design that allowed them to inventory 65 million acres while maintaining their research focus on a relatively minor component—productive forest land—of the area. The ability to describe vast areas of land is critical to resource assessment efforts in many less densely populated areas of the world. This research provided a method that allowed extensive area coverage while providing flexibility to address specific issues of concern to inventory specialists.

In the future, van Hees plans to look for even more innovative ways to analyze biodiversity. He intends to combine spatial analyses with remotely sensed information and geographic information systems data to develop new techniques that will help him in his research.

Background

M.S., forest management, Oregon State University

Ask Him About

Forest resources, forest inventories, resource analysis techniques, land cover, land cover change.

Susan Willits

Supervisory physical scientist, Pacific Northwest Forest Inventory and Analysis Program, Portland Forestry Sciences Laboratory

As a supervisory physical scientist and manager of the Forest Inventory and Analysis Program at the Forestry Sciences Laboratory in Portland, Ore., Susan Willits is responsible for coordinating the inventory and analysis efforts of all forested lands throughout Alaska, California, Hawaii, Oregon, Washington and six Pacific Islands.

Willits began leading the program in 1997 and has managed it through its most significant expansion and change in 30 years. The program has initiated annual inventories in four states, started inventory work in the Pacific Islands, merged the field portions of its inventory and forest health monitoring components and more than doubled its research staff.

With a diverse background in forestry, wood science and technology, forest management and biometrics, Willits, who has worked for the Station for the past 23 years, provides the public with baseline information to use in decision-making. She assisted in the development of a volume measurement system for logs and trees. She also developed a tree grading system for second-growth ponderosa pine and produced information on product output and tree value for commercial species throughout the Western United States.

In the future, Willits plans to continue managing the Forest Inventory and Analysis Program. In particular, she will continue to actively seek partnerships with state forestry organizations, consultants, environmental organizations and others and increase the program's communication efforts.

Background

M.S., forest science, Oregon State University

Ask Her About

Forest inventory and monitoring, forest products, wood measurement systems, tree grading, tree value.

Tricia L. Wurtz, Ph.D.

Research ecologist, Boreal Ecology Cooperative Research unit, Fairbanks, Alaska

If you'd ask Tricia Wurtz to describe an event that helped in her research, she'd probably tell you about the time she was asked to speak to the board of directors of the Chitina Native Corporation to tell them why they should reforest 25,000 acres of land that had been devastated by bark beetles and that was about to be harvested. She brought a male colleague with her to the small village because she feared her scientific credibility might be compromised because she was a woman. When she arrived, she was surprised to see that all but one of the board members were women. Some had even brought their children. The experience taught her two things: one, she should have brought her own children along instead of her colleague; two, her professional relationships with Native Corporations would be a rewarding part of her work as a scientist in Alaska.

Wurtz is a research ecologist who has studied Alaska's boreal—or northern—forests for more than 20 years. Much of her work has been focused on white spruce—interior Alaska's primary timber species—and the effects of clearcutting, moose, bark beetles and other tree species on its survival and growth. Wurtz' research has shown that white spruce is capable of adequately regenerating itself, albeit more slowly, in the absence of expensive artificial regeneration—a finding contrary to what was once widely believed. This finding has prompted the state of Alaska to reevaluate its time frame for stocking requirements.

Wurtz enjoys working in Alaska—a place she describes as one of the best natural laboratories in the world—and with Alaska Native Corporations—groups that she says are very often in need of her science findings to make management decisions.

Background

Ph.D., forest ecology, University of Oregon; member, Kenai Peninsula Borough's Technical Committee on Reforestation; Chair, Yukon River Chapter of the Society of American Foresters

Ask Her About

Boreal (northern) forests, alternatives to clearcutting, white spruce, Alaska Native Corporations, moose, bark beetles, nontimber forest use, commercial harvest of wild mushrooms, long-term ecological research.

Andrew Youngblood, Ph.D.

Research forester, Disturbance Ecology and Management team, La Grande Forestry and Range Sciences Laboratory

Andrew Youngblood, a research forester at the Forestry and Range Sciences Laboratory in La Grande, Ore., studies stand development and the role of natural and human-caused disturbances—occurrences, like insect outbreaks and fires, that have the potential to alter a forest—in forest stand dynamics.

In one of his studies, Youngblood coordinated research to evaluate the role of insects on canopy foliage in old-growth ponderosa pine forests. He reconstructed a 622-year record of outbreaks of the Pandora moth—an indigenous insect whose larvae consume the foliage of ponderosa and other pines—by using evidence preserved in tree rings, a technique known as dendrochronology. The regional time series, from 1374 to 1995, was the longest reconstruction of forest insect population dynamics developed for North America. Data from this time series show that modern outbreaks were not more extensive, more severe, or longer in duration than outbreaks in previous centuries. This is counter to recent suggestions that past management practices have led to declines in forest health manifest by changes in insect outbreak dynamics.

In another study, he developed a means for classifying the mixed white spruce and hardwood stands of interior Alaska and relating composition to past disturbance patterns. This work suggests that the multiple pathways leading to mature forest stands are affected by the composition of plant communities established immediately after a major disturbance. This finding gives managers new tools to aid in developing silvicultural plans and management regimes that sustain diversity, productivity and resilience to natural stresses.

Youngblood is currently studying the effects of fire in maintaining old-growth ponderosa pine and the consequences and trade-offs of alternative fire treatments and techniques for reducing fire risk. He also is developing silvicultural options for regenerating and managing mixed white spruce and hardwood stands and landscapes in interior and south-central Alaska.

Background

Ph.D., forest ecology, University of Alaska, Fairbanks

Ask Him About

Disturbance; dendrochronology (study of dating by using tree rings); fire; reducing fire risk; alternative fire treatments; old-growth ponderosa pine; management options for white spruce, paper birch, and trembling aspen.

Sue A. Ferguson, Ph.D.

Research atmospheric scientist, Atmosphere and Fire Interactions Research and Engineering team, Pacific Wildland Fire Sciences Laboratory

Sue Ferguson has spent her life—both personally and professionally—admiring the clear, blue skies and green mountains of the Pacific Northwest. Now, as a research atmospheric scientist and leader of the Atmosphere and Fire Interactions Research and Engineering team at the Pacific Wildland Fire Sciences Laboratory in Seattle, Wash., her primary passion is to understand what threatens these values and develop tools that help mitigate adverse impacts.

Ferguson developed a method of determining where and how often blue skies can become hazy with a tool known as the Ventilation Climate Information System or VCIS. The VCIS is the first nationally consistent method of assessing potential smoke problems in major airsheds around the country. In 2002, VCIS was used during the Biscuit wildfire in southwestern Oregon to help plan smoke impacts from the burn. It has also been used to document land management plans in Idaho, California and Colorado.

Ferguson also led the creation of another model system designed to track smoke impacts. Known as "BlueSky," it predicts surface concentrations of smoke and allows efficient assessments of smoke impacts. In 2002, the model helped support containment strategies on the Quartz Mountain wildfire in north-central Washington. It is currently being used in Washington, Oregon, Idaho, western Montana and British Columbia to assess and help mitigate smoke impacts from prescribed fires and wildfires. It is also generating new opportunities to understand the dynamic relationship among fuel, fire and the atmosphere.

Ferguson enjoys the opportunity to study the ways fire interacts with the natural resources of the Pacific Northwest and finds the societal benefit that results from her research of complex interactions extremely rewarding.

Background

Ph.D., geophysics/atmospheric sciences, University of Washington; member, American Meteorological Society, American Geophysical Union, International Glaciology Society, American Avalanche Association, International Association of Wildland Fire

Ask Her About

Wildland fire, weather, air quality, climate change, glaciers, snow, smoke management, high-resolution meteorological modeling.

Don McKenzie, Ph.D.

Research ecologist, Fire and Environmental Research Applications team, Pacific Wildland Fire Sciences Laboratory

Don McKenzie, a research ecologist at the Pacific Wildland Fire Sciences Laboratory in Seattle, Wash., credits great teachers in his past for influencing him and his current research. Now he makes a habit of encouraging younger scientists and students—the same way his teachers encouraged him—to think creatively about difficult research problems.

McKenzie's own research is focused on some often-difficult research problems. He studies the landscape ecology of fire, how it is affected by climatic change and management and, in turn, how it affects smoke emissions and air quality. McKenzie has developed models of fire frequency that help researchers and land managers understand and restore historical fire regimes. He has identified climatic and biophysical controls—such as soil-water balance and snowpack—that influence the distribution of conifer species. Understanding these controls enables projections of the effects of climatic change on forests and identifies vulnerable plant species and landscapes. McKenzie also has studied the spatial patterns of increased tree growth in response to 20th-century climate.

McKenzie has found that the integration of existing databases and models with efforts to identify new directions in research is a productive scientific approach. Integrating existing ecosystem models with dynamic modeling of fire regimes and fuel loadings in response to climatic variability, for example, can produce dynamic projections of the effects of future fires on regional air quality.

Background

Ph.D., landscape ecology, University of Washington

Ask Him About

Fire and landscape ecology, fire history, climate change, air quality, biogeography (study of the geographical distribution) of conifer species.

Ron Neilson, Ph.D.

Bioclimatologist, Mapped Atmosphere-Plant-Soil System team, Corvallis Forestry Sciences Laboratory

The Western United States is more than just a physiographic region to Ron Neilson. It's a source of scientific and spiritual sustenance.

Neilson, a bioclimatologist and leader of the Mapped-Atmosphere-Plant-Soil System team at the Forestry Sciences Laboratory in Corvallis, Ore., combines his passion for biology and physics with his more primitive need to explore the wild landscapes of the West with important results—his research has implications for, literally, everyone on the planet.

Neilson has been studying the theory, mechanisms and simulation of vegetation distribution for almost three decades. He develops models that simulate the dynamics of vegetation under a variety of climatic conditions of the past, present and future. By using his Mapped-Atmosphere-Plant-Soil System (MAPSS) model, Neilson is able to predict potential vegetation distribution anywhere in the world from climate and soils information. It is one of only a handful of models in the world that is capable of simulating, from first principles, the possible changes in the distribution of the world's ecosystems under altered climate. Products stemming from the MAPSS model have been used by assessment groups and have been presented before Congress and around the world. The model was recently hybridized with another model and is being used to forecast fire risks in upcoming seasons in the contiguous United States.

Neilson also developed the core theory for a model that interpolates precipitation data in mountainous terrain. The model is the most statistically accurate of its kind and is used by several other countries and the National Oceanic and Atmospheric Administration, among others. It is now assisting in forecasting fire risks for upcoming fire seasons.

Neilson plans to continue to improve versions of his models in the future. That way, he will continue to further the understanding of the responses of ecosystems to climate variability and change.

Background

Ph.D., biology (plant ecology, biogeography), University of Utah; member, American Association for the Advancement of Science, American Geophysical Union, American Institute of Biological Sciences

Ask Him About

Climate change, vegetation distribution, fire risk forecasts, ecosystem function and change.

David L. Peterson, Ph.D.

Research biologist, Fire and Environmental Research Applications team, Pacific Wildland Fire Sciences Laboratory

When most people think of old-growth forests in the Pacific Northwest, they immediately picture lush, low-lying landscapes dominated by Douglas-fir. When David Peterson, a research biologist who has studied Pacific Northwest ecosystems for more than 10 years, thinks of these landscapes, he also pictures subalpine forests growing high on the peaks of the Olympic Mountains and Cascade Range of Washington state.

Peterson has focused much of his research on these subalpine systems, which, like the region's characteristic old-growth Douglas-fir forests, are complex ecosystems that are often hundreds of years old. Subalpine forests are an ideal setting for his studies on the effects of environmental stressors, such as fires and climate change, on the health of forest ecosystems. Peterson is currently focusing on how fire disturbance can be integrated in the management of forest ecosystems in the Western United States. His work on the development of scientific principles for effective implementation of mechanical harvest—or thinning—and prescribed burning will help remove accumulated fuels and reduce the risk of crown fires.

Because most of Peterson's ecological research is interdisciplinary in its approach, he is able to both learn from scientists in other fields and apply his findings to theirs. Crossing the boundaries of science and drawing from other related disciplines is, as Peterson sees it, not only natural, but the only realistic way to address the complex issues surrounding natural resource management.

Background

Ph.D., forest ecology, University of Illinois

Ask Him About

Climate change, wildfires, human disturbance, environmental stress, mountain ecology, natural resource management.

David V. Sandberg, Ph.D.

Research physical scientist, Fire and Environmental Research Applications team, Pacific Wildland Fire Sciences Laboratory

David (Sam) Sandberg, a research physical scientist and leader of the Fire and Environmental Research Applications team, works in what is probably one of the largest natural laboratories in the world. Although he has offices in Seattle, Wash., and Corvallis, Ore., his research extends along the "Transect of the Americas"—a vast geographic area that stretches from the northern forests of Alaska, through the temperate ecosystems of the United States and Mexico, to the tropical forests and savannas of Brazil and Bolivia.

Sandberg is a fire expert who has found the "transect" to be an excellent venue for developing, calibrating and validating his team's research and models in all of the world's biophysical environments—northern and temperate forests and rangelands, tropical forests and savannas—to ensure his research can be applied equally and consistently anywhere in the world.

In the 1980s, Sandberg developed a model for predicting the rate and amount of air pollutant emissions from fires; the model remains the only one of its kind. This information is critical to both the management and regulation of air quality. Sandberg also developed a model for estimating how fuel is consumed during a fire—information that can help land managers better determine when and how fire should be applied and assess the consequences.

Sandberg was personally involved in resolving the stalemate that existed between air resource managers—who felt fire should be restricted—and land managers—who realized the beneficial effects of fire in ecosystems—by demonstrating that certain measures, such as meteorological scheduling and pretreatments, could be applied to substantially reduce emissions.

In addition to possibly extending his natural laboratory to include field research in Russia and Australia in the future, Sandberg will continue to pursue research that links fire with air quality and global change and that connects science with managers.

Background

Ph.D., forest fire science and engineering, University of Washington

Ask Him About

Wildland fire management, air quality, global change, air pollution, climate change, smoke management, prescribed fire, "Transect of the Americas," fire models.

Clint S. Wright

Research forester, Fire and Environmental Research Applications team, Pacific Wildland Fire Sciences Laboratory

Clint Wright understands the complex ecological implications of fires in ecosystems. He also knows that there are potential public health and resource management concerns stemming from fire's impact on air quality and ecosystems.

Wright is a research forester at the Pacific Wildland Fire Sciences Laboratory in Seattle, Wash., whose work is focused on fire effects and fire ecology. In one study, he developed fuel consumption models for shrub-dominated ecosystems. Fuel consumption—or the rate at which fires consume combustible material—is tied to a host of fire effects, important among them being biomass emissions. The ability to predict fuel consumption will aid resource managers in determining the impacts of prescribed and wildland fires on air quality. Collectively, these findings will allow resource managers to mitigate the impacts of fires on the general public and the nation's natural resources.

In the future, Wright will continue to develop models of fuel consumption in ecosystems that have not yet been studied. He will also develop methods for sampling fuels and fire effects at prescribed and wildland fires and explore the effects and effectiveness of forest restoration in forest types adapted to fire.

Background

M.S., forest ecology, University of Washington

Ask Him About

Fire ecology, fire history, fuel inventory, prescribed fire, ecological restoration.

Mason D. Bryant, Ph.D.

Research fish biologist, Juneau Aquatic and Land Interactions team, Juneau Forestry Sciences Laboratory

Mason Bryant used to go fishing for brook trout in beaver ponds. Now, as a research fish biologist with the Forestry Sciences Laboratory in Juneau, Alaska, he still goes fishing—in a sense—and his work has revisited beaver ponds.

Bryant's research is focused on the freshwater ecology of salmonids—a diverse family of fish that includes salmon, trout and steelhead. He examines the response of juvenile salmonid and their habitat to disturbance and develops monitoring tools for land management practices. One of Bryant's studies found that the habitat of juvenile salmonids extends well beyond stream banks and into areas known as floodplains, which include beaver ponds, sloughs and side channels. Identifying these additional habitats and the processes that affect their use are key elements to consider during watershed analysis procedures that accompany management plans. These areas are also significant ecosystem features that can be key parts of watershed restoration efforts.

Bryant also found that juvenile salmonids can move extensively and seasonally throughout small watersheds. The fish can move into small tributaries—or streams that empty into other bodies of water—a landscape feature that has, in the past, been largely ignored as viable salmonid habitat. This finding emphasizes the importance of maintaining the integrity of small tributaries and tributary access throughout all parts of the watershed, particularly where roads cross streams.

In the future, Bryant will examine the factors that affect the productivity of salmonids in freshwater ecosystems. He will also study the ecological relationship between salmonid species and potential invasive species, such as the Atlantic salmon, in southeast Alaska—a region that supports some of North America's last intact watersheds.

Bryant enjoys both working in southeast Alaska and providing information that will contribute to the maintenance and enhancement of habitat and salmon populations in the region and throughout the Pacific Northwest.

Background

Ph.D., fisheries, University of Washington; member, American Fisheries Society, Ecological Society of America, American Institute of Research Fishery Biologists

Ask Him About

Salmon, aquatic habitat disturbance, streams, watersheds, fish ladders, invasive fish species.

Evelyn L. Bull, Ph.D.

Research wildlife biologist, Disturbance Ecology and Management team, La Grande Forestry and Range Sciences Laboratory

In some cases, the wildlife species that inhabit particular ecosystems are the best indicators of that ecosystem's health. Evelyn Bull, a research wildlife biologist at the Forestry and Range Sciences Laboratory in La Grande, Ore., seeks out these so-called "indicator species"—species whose existence is closely tied to certain elements of an ecosystem—and she structures her research around them.

Bull has been conducting research on sensitive wildlife species and unique or critical wildlife habitats—such as old-growth and dead trees—for 25 years. She has concentrated her research in the Douglas-fir and grand fir zones of the Blue Mountains region of eastern Oregon. Her current research emphasis is on the influence of natural and human-caused disturbance events on amphibian ecology and wildlife dependent on coarse woody debris, both standing and down. She is also focusing on the ecology of wildlife species associated with old-growth forests—including pileated woodpeckers, Vaux's swifts and American marten.

In the future, Bull plans to determine the effect of widespread tree mortality on Vaux's swifts and pileated woodpeckers—two cavity-nesting bird species associated with old growth—and determine the influence of fire and forest management on movements and survival of western toads.

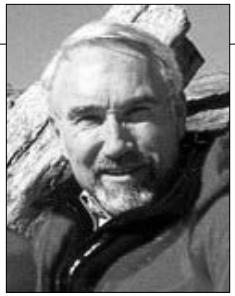
Bull enjoys research because it allows her to provide information that can improve management for wildlife species.

Background

Ph.D., wildlife ecology, University of Idaho

Ask Her About

Sensitive wildlife species, old-growth forests, dead trees, ecosystem indicators, wildlife management.



Thomas A. Hanley, Ph.D.

Research wildlife biologist, Alaska Wildlife Habitat team, Juneau Forestry Sciences Laboratory

If you would ask Thomas Hanley about his science findings, he would probably tell you that few of them are truly his own. Hanley, a research wildlife biologist at the Forestry Sciences Laboratory in Juneau, Alaska, says he has always worked in collaboration with other scientists and researchers and that his scientific accomplishments are best described as team accomplishments.

Hanley studies the ecology of understory plants and large herbivores—like deer and moose—in Alaska ecosystems. In one study, by using laboratory and analytical techniques, Hanley and his colleagues developed equations for predicting the effects of plant tannins on protein and dry matter digestion in wild ruminants. This finding opened up new ways of evaluating food and habitat for ruminants, especially deer. They also developed modeling techniques for quantitatively evaluating habitat on the basis of both quality and quantity of foods.

In another study, he and his colleagues found that the inclusion of red alder in young-growth spruce-hemlock stands in southeast Alaska may result in greater understory biomass and species diversity than can be accomplished by any other silviculture technique yet known there. The implications of this finding for red alder and alternative silvicultural methods are just beginning to be explored.

Hanley, who has twice been a co-recipient of The Wildlife Society's "Publication of the Year Award," says the most rewarding part of his work is collaborating with scientists and researchers from all over the world. In the future, he plans to continue his research on understory plant ecology and the role of large herbivores in Alaska ecosystems and develop analytical tools needed for evaluating trade-offs in forest management decisions.

Background

Ph.D., forest zoology, University of Washington

Ask Him About

Black-tailed deer, moose, nutritional ecology, habitat evaluation, Alaska ecosystems, understory plant ecology, silviculture.

Frank H. McCormick, Ph.D.

Fish biologist, Boundary Spanning team, Olympia Forestry Sciences Laboratory

For Frank McCormick, being a scientist is a great deal. He gets to do what he's wanted to do ever since he was a child: ask questions that interest him and go seek out the answers.

McCormick is a fish biologist and leader of the Boundary Spanning team at the Forestry Sciences Laboratory in Olympia, Wash. The team is focused on bridging the gap between the generation of science information and its use by natural resource and land managers.

Prior to joining the Forest Service, McCormick worked for the U.S. Environmental Protection Agency where he and his colleagues conducted research on the responses of aquatic ecosystems to human disturbance, particularly environmental contaminants. They explored new methods to detect aquatic stressors and the response and recovery of aquatic systems. Ultimately, their research showed that it is essential to describe natural variability of aquatic communities in order to be able to detect the "signal" of human disturbance in watersheds. McCormick and his colleagues also found that persistent biological contaminants—a type of environmental disturbance—including mercury, PCBs and DDT, are much more widely distributed in small streams than previously thought. They also found that invasive aquatic species—such as the brown trout—can have tremendously negative effects on ecosystems by altering the ecological integrity of a stream, adversely interacting with native species, and changing food web dynamics.

In the future, McCormick plans to further the mission of his team by integrating the science findings of the Aquatic and Land Interactions Program with the planning being done by its partners in resource management. He also plans to make the program's research as accessible as possible to scientists, resource managers and the public.

Background

Ph.D., zoology, University of Oklahoma; member, American Society of Ichthyologists and Herpetologists; American Fisheries Society; Sigma Xi Society

Ask Him About

Streams, freshwater fish, ecological disturbance, environmental contaminants, invasive fish species, nutrient dynamics in streams.

Gordon Reeves, Ph.D.

Research fish biologist, Corvallis Aquatic and Land Interactions team, Corvallis Forestry Sciences Laboratory

Gordon Reeves, a research fish biologist at the Forestry Sciences Laboratory in Corvallis, Ore., went into research for two reasons. For one, he wanted to be able to continually learn new things—not only about fish species and aquatic habitats—but about a wide range of other subjects. For another, he wanted to work with people from a variety of other disciplines. For him, the field of fisheries biology was the perfect combination.

Reeves' research has focused on the impact of land management practices on juvenile anadromous salmon and trout and their freshwater habitats. He has also examined the dynamics of aquatic ecosystems and the role of disturbances—such as landslides—in creating and maintaining fish habitats in the Pacific Northwest and Alaska. In addition to his formal research, Reeves has been involved in several efforts aimed at developing and evaluating options for managing aquatic ecosystems and developing recovery plans for fish species listed as threatened or endangered.

In the future, Reeves' research emphasis will shift to examining the dynamics of aquatic ecosystems and landscapes and determining the pattern of fish and fish habitat over large spatial and temporal scales—such as across landscapes and over several seasons.

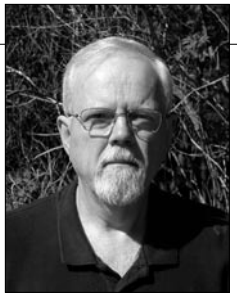
Reeves enjoys his work because it helps provide a scientific foundation for the development of new practices and policies involving the management of public lands in the Pacific Northwest. More specifically, his science findings help people understand aquatic ecosystems and their associated fish populations and provide the basis for developing and evaluating new policies and practices for land management.

Background

Ph.D., fisheries science, Oregon State University

Ask Him About

Aquatic ecosystems, landscape ecology, land management practices, salmonids (salmon, trout and steelhead), salmonid conservation.



Winston P. Smith, Ph.D.

Research wildlife biologist, Alaska Wildlife Habitat team, Juneau Forestry Sciences Laboratory

One of Winston Smith's earliest memories of science takes him back to grade school in south-central Louisiana, to a time when he realized he had an interest in science and in pursuing some aspect of it as a career. Now, a research wildlife biologist at the Forestry Sciences Laboratory in Juneau, Alaska, Smith still finds the field of science—and his research in wildlife biology—just as fascinating.

Much of Smith's research experience is centered on the conservation biology of sensitive, threatened or endangered wildlife species. Over the course of 20 years, he contributed to the knowledge base, habitat and population management, and, ultimately, the recovery of the Columbian white-tailed deer, a federally listed endangered species once abundant in the Willamette River and other interior valleys of western Oregon and southwestern Washington.

Smith's research is currently centered on the ecology of small mammals found only in the temperate rain forests of southeast Alaska. His work provided the first quantitative information on the distribution and habitat relations of the northern flying squirrel—an arboreal, or tree-dwelling, species—and the southern red-backed vole—a forest-floor species, both reputed to be old-growth habitat specialists.

In the future, Smith plans to broaden his research focus to examine the role of northern flying squirrels in community processes—for example, how they contribute to the re-establishment of fungi and lichen through their dispersal of spores—in managed landscapes. He will also study the relationship between flying squirrel dispersal and habitat and landscape composition and connectivity in the temperate southeast Alaska rain forest.

Background

Ph.D., wildlife ecology/zoology, Oregon State University; life member, American Society of Mammalogists, Society for Conservation Biology, Ecological Society of America; member, The Wildlife Society, Society for Northwestern Vertebrate Biologists, Northwest Scientific Association

Ask Him About

Small mammals, island biogeography (the study of the distribution of species in geographically isolated areas), northern flying squirrel, temperate rain forest, threatened or endangered species, wildlife inventory and monitoring, land management planning.

Martin Vavra, Ph.D.

Research range scientist; Elk, Deer and Cattle Interactions team; La Grande Forestry and Range Sciences Laboratory

The health of an ecosystem can have tremendous impacts on its inhabitants. Not surprisingly, the inhabitants, too, can have a tremendous effect on their ecosystems. Martin Vavra, a research range scientist at the Forestry and Range Sciences Laboratory in La Grande, Ore., has focused his research on this dynamic. He studies the effects of vegetation on ungulates—or large hoofed browsers such as cattle, deer and elk—and the effects of ungulates on vegetation.

Vavra's research emphases are on identifying the effects of ungulates on the structure and composition of plant communities and identifying the influence of a forest's canopy layer on the production and composition of its bottom layer, which often supplies crucial browse for ungulates. He is also studying the effect of fuels reduction—a type of understory thinning designed to reduce fuel for fires—on ungulates.

In one study, Vavra found that livestock grazing systems designed to protect riparian zones—or areas bordering bodies of water—have the livestock production potential equal to that of traditional systems. This suggests that sensitive riparian zones adjacent to streams can be improved by the development of specific livestock grazing systems that, ultimately, do not compromise livestock production or incur undue costs to producers. In another study, Vavra found that livestock production can be enhanced on forested rangelands with grazing systems designed to take advantage of the physical characteristics of the environment—like elevation, aspect and soil depth.

In the future, Vavra will continue to design his studies so that their end products are useful to land and natural resource managers and, more broadly, improve the understanding of the ecosystems from which they are based.

Background

Ph.D., animal nutrition, University of Wyoming; member, Society for Range Management, The Wildlife Society, Society of American Foresters, American Society of Animal Science, The Sigma Xi Society; board, Society for Range Management

Ask Him About

Ungulates, herbivory (grazing), effects of ungulates on plant growth, effects of ungulates on vegetation recovery after fire or other disturbance, grazing systems.

Richard D. Woodsmith, Ph.D.

Research hydrologist, Wenatchee Aquatic and Land Interactions team, Wenatchee Forestry Sciences Laboratory

At first, geomorphology—the study of the processes that shape the physical features of the Earth—might seem far-removed from the study of forests and fish in the Pacific Northwest. But if you'd ask Richard Woodsmith, a research hydrologist at the Forestry Sciences Laboratory in Wenatchee, Wash., to tell you why the field is important to understanding ecosystems in the region, he'd tell you it's because geomorphology is, literally, quite fundamental. Geomorphic processes in streams, which can be altered by human land use patterns, have a direct effect on water quality and quantity and on the availability of high-quality habitat for important species like Pacific salmon.

Woodsmith's research is centered on these geomorphic processes. One of his studies focused on understanding the formation and maintenance of the physical characteristics of forest stream channels. He found that large woody debris—such as fallen trees— seems to play a significant role in characterizing these channels. This finding has important implications for the maintenance of aquatic habitats and the distribution of sediment through streams in forested areas.

Woodsmith, who spent 14 years at the Forestry Sciences Laboratory in Juneau, Alaska, before becoming leader of the Wenatchee Aquatic and Land Interactions team, is now studying the role of fire in maintaining high-quality aquatic habitat and the effects of fire on water quality and quantity. He enjoys his work because it provides him with the opportunity to further the understanding of issues important to society.

Background

Ph.D., geomorphology, Oregon State University; member, American Geophysical Union, Geological Society of America, American Water Resources Association, Japanese Geomorphological Union

Ask Him About

Streams, aquatic habitat, water quality and quantity, land use practices.

Richard W. Haynes, Ph.D.

Natural resource economist, Human and Natural Resources Interactions Program, Portland Forestry Sciences Laboratory

In addition to influencing natural resources planning and policy, Richard Haynes' research also impacts forest stewardship—or the ways in which forests are managed—and helps ensure forest resources for future generations.

Haynes, a natural resource economist and manager of the Human and Natural Resources Interactions Program, is responsible for performing social, utilization and economics research in Washington, Oregon and Alaska. More specifically, he develops analytical methods that make long-term projections of market activity and then uses those models in planning and policy analysis efforts.

Haynes developed trends in resource and forest products industry conditions for the United States by region from 1952 to 2050. He also measured the propensity of communities and economies to adjust to changes in the nature and extent of natural resource management. This allowed him to contribute to the development of socioeconomic resiliency.

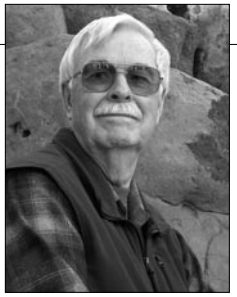
Currently, Haynes, who has worked for the Station for 28 years, is analyzing the U.S. timber situation and studying the demand for national forest timber, the relationship between jobs and the environment and broad-scale strategies for management. He plans to continue working on these research emphases in the future.

Background

Ph.D., forest economics, North Carolina State University; member, Society of American Foresters

Ask Him About

U.S. timber situation; economic models; timber industry; timber markets, including trade; jobs versus the environment; forest management; national forest timber demand; communities in transition.



Kenneth A. Kilborn

Research forester and forest products technologist, Alaska Wood Utilization Research and Development Center, Sitka, Alaska

The harvest of products—like wood and mushrooms—is an important characteristic many people value in forests. Kenneth A. Kilborn, team leader of the Alaska Wood Utilization Research and Development Center in Sitka, Alaska, is determined to see that this value persists in Alaska.

Kilborn's research has identified the major reasons why Alaska's forest products industry is not economically competitive in today's market. His research has also shown that Alaska's softwood species—such as western hemlock—can be treated with preservatives and used for construction, railroad ties and fencing. As a result of his research, the industry steps needed to improve the recovery of Alaska's marketable products can now be shown.

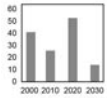
Kilborn sees his research as assisting community and forest industry survival in Alaska. In the future, he plans to continue providing problem-solving assistance to the region's forest products industry.

Background

M.S., natural resource administration, Colorado State University; member, Forest Products Society, Society of American Foresters

Ask Him About

Forest products, economics, preservative treatment, marketing.



Jeffrey D. Kline, Ph.D.

Research forester, Land Use and Cover Dynamics team, Corvallis Forestry Sciences Laboratory

As a native of the northeast United States, Jeffrey Kline is accustomed to witnessing population growth and major changes in land use. Now, as a research forester at the Forestry Sciences Laboratory in Corvallis, Ore., he studies these same processes in the context of the Pacific Northwest.

In one of his studies, Kline, who has conducted research on land use and other natural resource issues for over 15 years, examined changes in building densities as a measure of human dispersion in western Oregon. Whereas previous land use models described simple forest and urban land use categories, Kline's study acknowledged a gradient of human occupation of land, from very dense—as occurs in cities—to very unoccupied—as in undisturbed forest settings. This innovation allows scientists to account for a variety of potentially positive and negative impacts human occupation may have on timber production and habitat quality.

Kline also examined the impacts of urbanization on forests. He found that low-density development of private forest lands in western Oregon is accompanied by reduced forest management and forestry investment on those lands. This suggests that when there is standing merchantable timber on private forest land, owners in western Oregon tend to harvest and then not invest as intensively as before when managing their forests for future harvests. Although only a small proportion of forest land in the region is currently affected, population growth rates projected for Oregon suggest that population growth and development could have an even greater effect on forestry in the future—with both economic and ecological implications.

In the future, Kline intends to remain focused on describing the types of landscapes the public desires for the future and on crafting policies that ensure the greatest likelihood of achieving them.

Background

Ph.D., environmental economics, University of Rhode Island

Ask Him About

Land use change, land use policies and programs, urbanization impacts on forests and forestry, environmental and natural resource economics, public policy.

Linda E. Kruger, Ph.D.

Research social scientist, Communities and Forest Environments team, Juneau Forestry Sciences Laboratory

In Linda Kruger's research, people are always included in the formula.

Kruger, a research social scientist at the Forestry Sciences Laboratory in Juneau, Alaska, performs research that analyzes the complex relationship between people and the environment. Her research is focused on community capacity; participatory research design; the special connections people have with places on the landscape; and the interactions among tourism, recreation and traditional and rural cultures. Ultimately, her research helps managers better understand what the public thinks about and expects from forest management and why, for example, they recreate in certain places.

In her studies, Kruger has found that traditional research methods and public participation approaches are not well suited to drawing out knowledge held by community members. A more systemic, holistic and integrative approach is necessary. She has also found that formal, scientific assessments may be necessary, but are not sufficient in understanding community-forest relations. A science based more in civics provides opportunities for community members and agency employees to collaborate and fosters integration of scientific and local knowledge.

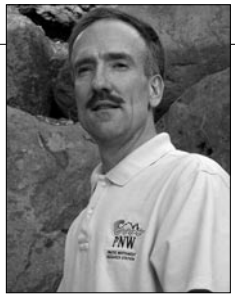
In the future, Kruger plans to design, apply and communicate research on the interrelationships between human communities and forests that is grounded in a systemic, holistic, integrative and participative orientation. Primary interests she will explore are the meanings and attachments people have for special places, how these meanings and attachments influence people's perceptions of places and management and how this information can inform forest planning and management.

Background

Ph.D., forest resources/social sciences, University of Washington; member, Society for Applied Anthropology, International Association for Society and Natural Resources, Rural Sociological Society

Ask Her About

Recreation and tourism, forest and natural resource values, public perceptions of the environment, traditional cultures, rural communities, people-place relations.



David L. Nicholls, Ph.D.

Forest products technologist, Alaska Wood Utilization Research and Development Center, Sitka, Alaska

Wood utilization issues have the potential to significantly impact the local communities and economies of Alaska. David Nicholls, a forest products technologist at the Alaska Wood Utilization Research and Development Center in Sitka, Alaska, studies wood utilization—and the ways in which it can be improved for the benefit of both people and the environment.

Nicholls' research is focused on examining the ways in which hardwood tree species—such as red alder and birch—and wood residue are used. Much of his research has addressed the theme of producing higher value products from Alaska's underutilized tree species. Nicholls led one study that examined the feasibility of using red alder for kitchen cabinet construction. His wood residue research focuses on the feasibility of using wood wastes for community heating and lumber drying and on identifying local and export markets for wood compost products. In addition to work on utilization and residues, Nicholls and his colleagues are also developing computer-based methods that count and measure growth rings in Alaska trees. These methods could be used to evaluate wood quality and tree growth following fires, thinning treatments, or other forest management activities.

Nicholls and his colleagues will continue to focus on wood utilization issues with the intent to both create new wood products businesses that can stimulate Alaska's local economies and to help find higher value uses for the region's underutilized species.

Background

Ph.D., wood science and technology, Pennsylvania State University; member, Forest Products Society

Ask Him About

Hardwood utilization, wood residue utilization, lumber drying, wood products marketing.

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