



National Park Service North Coast and Cascades Research Learning Network

Lisa Eschenbach

Imagine living laboratories where science and education are combined to increase our knowledge and understanding of the natural world and our relationship with it. Picture places where natural and cultural scientists conduct groundbreaking research that helps national park managers protect the seashores, forests, subalpine meadows and other natural and cultural resources in their care.

To see this vision through, the National Park Service has established thirteen Research Learning Networks and Centers around the country. The North Coast and Cascades (NCC) Research Learning Network, established in 2001, is one of the earliest established learning networks. The Network is formed through a partnership of eight network parks with universities and colleges, non-profit organizations, and state and federal agencies. The network's benefits for research in network parks have included better partnerships, small grants, outreach to researchers, in-park research housing and in some cases, lab space.

Last year, the NCC Research Learning Network developed collaborative projects with nine University or College partners. The Pacific Northwest Cooperative Ecosystems Studies Unit (PNW CESU) plays a critical role in helping us connect with these partner institutions. These partnerships and the PNW CESU have helped us stretch our tight dollars.

Projects run the gamut from research about natural and in some cases cultural resources. They include studies of:

- The effectiveness of using hair snag methodology to track black bear populations in Olympic National Park.

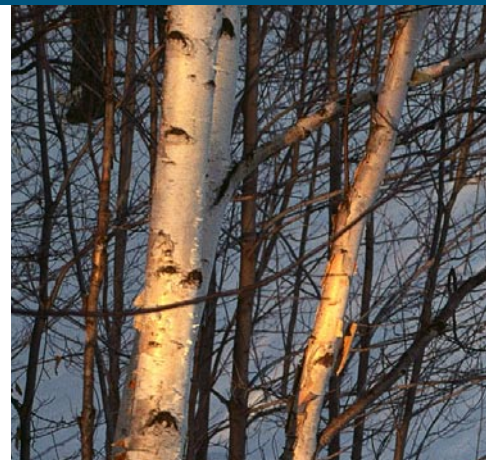
- The impacts of park recreation on mycorrhizae and other soil processes in subalpine environments in North Cascades and Mount Rainier National Parks.
- White Bark Pine populations in North Cascades National Park.
- The impacts of trampling on rocky intertidal shores of Olympic National Park.

Other projects include:

- A field archaeology school which unearthed a gun powder magazine building at Fort Vancouver National Historical Site in conjunction with Portland State and Washington State Universities.
- A paleoenvironmental and archaeological partnership with the Muckleshoot tribe and International Archaeology Research Institute, Inc. to examine a subalpine environment in Mount Rainier National Park.
- A partnership consortium to support research on the Elwha River Restoration Project. This project brought in multiple partners such as Western Washington University, Peninsula College, Olympic Park Institute and Olympic National Park to develop projects and funding proposals.
- Botany forays which identified and collected plant species in North Cascades, Mount Rainier National Parks and Ebey's Landing National Historical Reserve.

In addition to fostering partnerships to increase network park research, the NCC Research Learning Network also supports furthering park research through education and outreach to the public. Through

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Mission

The Pacific Northwest Cooperative Ecosystem Studies Unit (PNW CESU) is a partnership for research, technical assistance and education to enhance understanding and management of natural and cultural resources.

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PNW CESU Partners

Federal:

US Bureau of Reclamation
US Forest Service
(PNW Research Station)
National Park Service
Environmental Protection Agency
Bureau of Land Management
US Geological Survey
US Fish and Wildlife Service

University:

University of Washington (host)
Oregon State University
Southern Oregon University
University of Vermont
Tuskegee University
Heritage College
University of British Columbia
University of Alaska - SE
University of Alaska - Anchorage
Washington State University
University of Oregon
University of Idaho
Western Washington University
Alaska Department of
Fish and Game

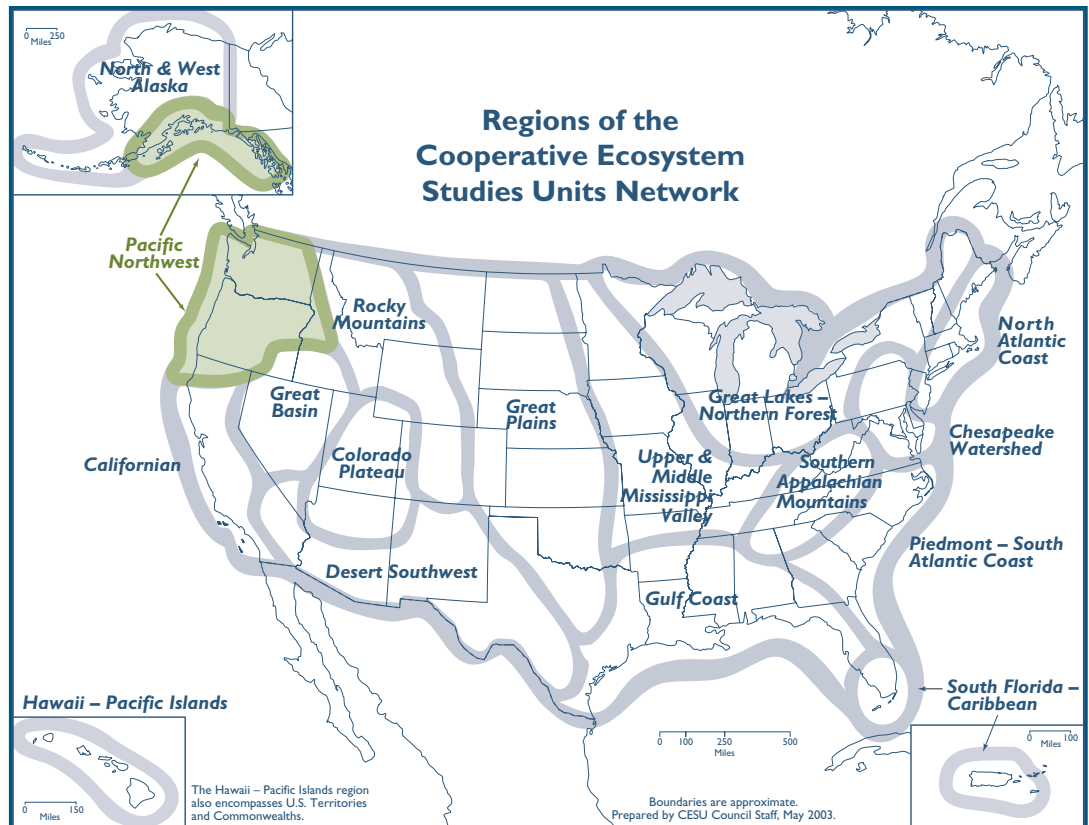
Contact information for all our
representatives can be found on
our Web site: www.cfr.washington.edu/research.cesu

Visit our Web site at:

www.cfr.washington.edu/research.cesu

- Browse our on-line project library
- Download the project summary form
- Find helpful materials for initiating a project through the PNW CESU.

The PNW CESU and the CESU National Network



The **Pacific Northwest Cooperative Ecosystem Studies Unit** encompasses a region extending across 5 states (Washington, Oregon, Northern California, Western Idaho and South East Alaska) and is hosted by the University of Washington. As a member of the National CESU Network, the PNW CESU is a working partnership among leading academic institutions, federal, state and non-governmental organizations.

The **CESU National Network** is organized around biogeographic regions across the United States. Each Region is served by a distinct CESU, with all CESUs linked together in the National Network. The goal of the Cooperative Ecosystem Studies Unit Network is to improve the scientific base for managing federal lands by providing resource managers with high quality scientific research, technical assistance and education through their working partnerships.

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countless educational partnerships, the NCC Research Learning Network has taught over 25,000 people about science in their parks.

In some cases, people came to parks for intensive hands-on learning offered by our non-profit partners North Cascades and Olympic Park Institutes. To learn more about student, teacher, adult and family programs, contact North Cascades Institute at www.ncascades.org or Olympic Park Institute at www.olympicparkinstitute.org.



Photo courtesy of Olympic Park Institute

Students from Newport Harbor High School in California collect stream monitoring data with North Coast and Cascades partner, Olympic Park Institute.

The network itself offered additional hands-on opportunities through our EarthCorps Service Learning projects in Mount Rainier, North Cascades and San Juan Island National Parks. Youth groups who participate in these 1-3 day programs help the parks by removing non-native plants, helping build and maintain trails, working in our greenhouses and recording their experiences in the parks to share with others. If you want to learn more about these programs, contact Lisa Eschenbach at 206-220-4017.

Additional programs on park science include:

- Park Science talks on topics including

bats, glaciers, salmon runs, and geomorphology have been held at North Cascades, Mount Rainier and Olympic National Parks for both researchers and the general public.

- Teacher trainings to share current park science resources with middle and high school science teachers
- The development of a new science based education webpage about North Cascades National Park. To visit it, go to www.nps.gov/noca/journey/home.htm.
- Spanish-language based programs on migratory birds led by National Park Foundation Park Flight grant recipient Roberto Quintero Dominguez. Dominguez led family tours in the park, translated park signs, was the special guest on a radio show, and appeared as the keynote speaker at the Leavenworth Spring Bird Festival.
- Student monitoring programs by both Olympic Park and North Cascades Institutes recorded water quality data for park streams. These monitoring programs help parks maintain data about park water quality while involving students in real-life science and analysis.

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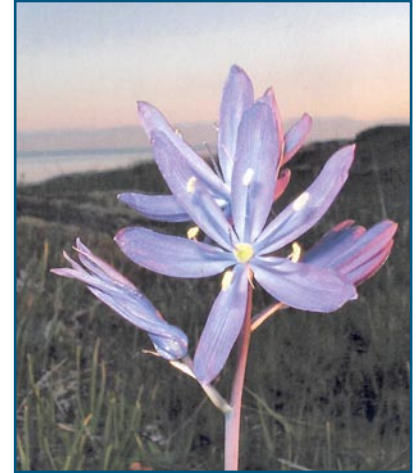


Photo courtesy Betsy Adams

Camas blooming in the San Juan Island National Historical Park prairie.

Students from Portland State and Washington State Universities helped Fort Vancouver National Reserve excavate a gun-powder magazine as part of a North Coast and Cascades Research Learning Network sponsored field archaeology institute.



Photo courtesy NPS collections

Web Resources

To find out about a specific park, or the National Park Service in general, visit www.nps.gov.

To find out more about the Natural Resource Challenge, under which the Research Learning Centers Operate, go to www.nature.nps.gov.

To find out more about doing research in a North Coast and Cascades Network Park, check out our Web site at: www.nps.gov/nwresearch.

To find out more about Research Learning Centers and Networks, go to www.nature.nps.gov/learningcenters.

And, to find out more about cultural resource and historic studies, go to www.cr.nps.gov.

The North Coast and Cascades Network Parks

- Mount Rainier National Park
- North Cascades National Park
- Olympic National Park
- Ebey's Landing National Historical Reserve
- Fort Vancouver
- Klondike Gold Rush National Historical Park
- Lewis and Clark National and State Historical Sites
- San Juan Island National Historical Park

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- Many Park guided walks and talks feature park science, as do visitor center exhibits.

Managing living, dynamic ecosystems as well as the historic and cultural history protected in our network National Parks is a huge challenge. Thanks to the concerted efforts of dedicated park employees and our invaluable partners, we are making progress in understanding and appreciating the complexity of our network national parks. **cv**

For more information contact

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Students from Seattle Community Centers help remove non-native plants as part of a North Coast and Cascades Research Learning Network project.



Photo courtesy of EarthCorps

Neon Update

Design Consortium Reports Available for Comment

From the NEON Consortium Development Team

Whether your interest is in the science that can be enabled by NEON, the unique educational opportunities that could be supported by NEON, the cutting-edge technologies that could be part of the NEON infrastructure, or how NEON is organized and run, we invite you to contribute.

Please visit the NEON Web site at <http://www.neoninc.org/Article16.html> to view and provide comments on one or more of the following committee or subcommittee reports.

Education Committee Reports:

K-12, Higher Education, and Informal Education.

Science and Human Dimensions Committee Reports:

Invasive Species, Infectious Disease, Biogeochemistry, Climate, Land Use, Biodiversity, Hydroecology, and Emerging Issues.

Facilities and Infrastructure Committee Reports:

Research Infrastructure, IT and Communication, and Sensor and Sensor Networks.

Consortium Development Committee:

optimizing the structure and governance of NEON, Inc., the entity that builds and operates NEON. **cv**

Part of our series of articles on the development of the National Ecological Observatory Network (NEON).

Partner Profile - Southern Oregon University

Summary of Collaborative Ventures Between Southern Oregon University and National Park Service-Klamath Network

Daniel Sarr, National Park Service-Klamath Network & Joe Graf, Southern Oregon University

Overview

Crater Lake National Park and Oregon Caves National Monument have worked with Southern Oregon University (SOU) for many years on a variety of natural resource and educational projects. The establishment of the National Park Service's Inventory and Monitoring Program, and the recognition of the Klamath Network, a confederation of six units in southern Oregon and northern California, and the inclusion of the university into the Pacific Northwest Cooperative Ecosystem Studies Unit (PNW CESU), greatly increased the level of active collaboration between the agency and the university.

Currently, the Inventory and Monitoring Program administers a number of ongoing projects with SOU. In 2003, the Klamath Network provided funding to the university to support data mining, technical writing, and to perform and fish and amphibian inventory in Lassen Volcanic National Park. In 2004, the network provided funding for collaborative projects in research, technical writing, geographic information analysis and floristic inventories in the network parks. In addition, the network provided funding in an administrative agreement to support the network's Inventory and Monitoring Program Office.

Research Highlights

In 2004, through a Task Agreement with Dr. Steve Jessup, the network acquired research and technical writing support to develop Phase I of the Network's Long-term Monitoring Plan. The agreement supported hire of temporary university staff, including an adjunct ecologist (Dr. Dennis Odion), a data mining crew leader (Sean Smith), and several student employees. These university employees played a critical role in conducting research and technical writing for the network.

The Lava Beds floristic inventory got off the ground in June, 2004. The first volunteer field day was led by Dr. Steve Jessup and David Larson of Lava Beds Na-

tional Monument. The inventory yielded one confirmed new species for the park (*Crepis bakeri*) and another potential new species, not yet positively identified, (*Alysum alyssoides*). Dr. Jessup and Lava Beds staff are planning two types of special events for the future: 1) 'botany blitzes' where the public, especially members of the Native Plant Society of Oregon and the California Native Plant Society, will be invited to Lava Beds to assist with the flora project. 2) An interpretive walk for the public given towards the end of the second field season.

In 2004, working with Joe Madden, a student at SOU, the network launched the inaugural issue of the Klamath Kaleidoscope, a twice yearly newsletter of the Klamath Network Inventory and Monitoring Program. The newsletter presented the structure, staff, and rationale for the program and showcased exciting science projects and finding support by the Klamath Network Inventory and Monitoring Program.

Through agreements with SOU and the USDA Forest Service Redwood Sciences Lab, the network launched a collaborative study between the Klamath Network, Dr. Michael Parker of SOU and Dr. Hartwell Welsh of the USDA Forest Service Redwood Sciences Lab to study the effects of introduced fish on native amphibians and invertebrate communities in high elevation lakes and ponds of LAVO. Fieldwork took place in summer 2004 and final reports will be prepared in the coming year. The collaborative team visited over 350 lakes and ponds during the field season and located the last known population of the Cascades frog (*Rana cascadae*) in the park. Aquatic invertebrate data are under analysis. Preliminary findings include a total of four individuals of Cascades frog (*Rana cascadae*) in the park, and documentation of residual fish populations in 11 lakes out of 55 formerly stocked lakes. Field observations suggest that aquatic invertebrate communities differ sharply in lakes with and without fish. [cv](#)



NPS photo, Lassen Volcanic National Park



Visit the PNW CESU web site for a complete list of SOU academic and research programs relevant to the CESU.

<http://www.cfr.washington.edu/research.cesu/participants/universities/sou.asp>

Partner Profile - Southern Oregon University Resources Available for CESU Projects

Specific Research projects by SOU Faculty

John S. Roden (SOU Biology) and Gregory V. Jones (SOU Geography) and Todd E. Dawson (UC Berkeley) Historic patterns of fog utilization and climate variability using stable isotope ratio analysis of Redwood tree ring cellulose. This project is funded by NSF and is in conjunction with the Redwood National and State Parks. <http://www.sou.edu/biology/Faculty/Roden.htm>

Dr. Steve Jessup (Biology) <http://www.sou.edu/biology/Faculty/jessup.htm>

- Hyperoceanic and Oceanic-montane Bryophytes in Periglacial Environments. Partners: North Cascades National Park, Olympic National Park.
- Bryophyte Survey and Inventory in the Crater Lake Caldera and Ecology of the Deep Bryophyte Community. Partner: Crater Lake National Park

Dr. Chris Oswald (Biology) is studying the possible effects of nickel on the liver, kidney, and blood characteristics of small mammals in serpentine areas.

<http://www.sou.edu/biology/Faculty/oswald/oswald.htm>

Eric Dittmer (Geology and Environmental Studies)

<http://www.sou.edu/geology/faculty/Dittmer.htm>

- Long term planning and community collaboration around ground and surface water management (e.g., WISE Project with the Bureau of Reclamation).
- Student projects with National Park Service (Crater Lake), BLM, BoR, U.S. Forest Service and local Watershed Councils.
- Urban growth and local land use issues

Dr. Carol Ferguson (Biology) has a grant with the CA Department of Fish and Game in conjunction with the USFW service to investigate the pollination system of the endangered Yreka Phlox. Her research is connected with the identification and role of pollinators of native plants.

<http://www.sou.edu/BIOLOGY/Faculty/ferguson.htm>

Dr. Kathleen Page (Biology) Crater Lake Microbial Ecology - Newly-developed culture methods are being used to obtain numerous different bacterial isolates from the naturally occurring bacterial population in Crater Lake.

Dr. Karen Stone (Biology) <http://www.sou.edu/biology/Faculty/Stone.htm>

Through a cooperative effort between SOU and the Bureau of Land Management, Karen Stone and her students are studying the genetics and isolation/connectivity of fishers (*Martes pennanti*) along the Interstate-5 corridor in southern Oregon and the Cascade-Siskiyou crest.

Dr. Kevin Sahr (Computer Science) The Discrete Global Grids Research Project develops advanced geospatial data structures and is currently funded by the Canadian Space Agency and the USDA Forest Service. The ISEA3H DGG, which divides the surface of the earth into equal area hexagonal cells, has been used by the USDA Forest Service and the US EPA for biodiversity research, survey sampling design, data distribution, and multi-scale discrete simulations.

<http://www.sou.edu/cs/sahr/dgg/> .

Dr. Pete Nordquist (Computer Science) We have developed a program that produces a visual representation of the spectrum of frequencies present in an audio signal, which aids in determining patterns present in this data. This frequency spectrum is also processed by an algorithm for detecting the fundamental frequency in the spectrum, commonly referred to by musicians as the pitch of the spectrum. <http://www.sou.edu/CS/newsite/faculty/nordquist/info.htm> .

Microbiological Geochemical Aspects of Acid Mine Drainage

Dr. William Elliott (Geology), Dr. Steven Petrovic (Chemistry), Dr. Kathleen Page (Biology), and Dr. Joseph Graf (Geology) are studying biologically mediated oxidation of sulfide minerals to better understand acid mine drainage (AMD). <http://www.sou.edu/geology/faculty/ElliottB.htm>, <http://www.sou.edu/chem/faculty/petrovic/index.htm>, <http://www.sou.edu/biology/Faculty/page.htm> .

Dr. Jon Lange (Professor of Communication) is the author of dozens of papers and publications on environmental conflict. He is on the Roster of Environmental Mediators with the U.S. Institute of Environmental Conflict Resolution. Dr. Lange has participated in a wide range of environmental dispute resolution processes for the USFS, the Bureau of Land Management, different watershed councils and environmental groups, and many others. **CV**

CESU Announcements

PNW CESU Five-year Review and Renewal

The three-phase review and renewal process for the PNW CESU is well underway. We are pleased that after five years of growth and success, ten of our twelve University partners intend to renew the PNW CESU Master Cooperative Agreement. In fulfillment of renewal requirements, the PNW CESU office and university partners completed a comprehensive self-assessment. The self assessment was accepted by the National Council in late January. A complete copy is available on our Web site <http://www.cfr.washington.edu/research.cesu/admin/PNW-CESUSelfAssessment.pdf> .

The final two stages of the renewal, a Federal Manager's Committee review and an External review, will be conducted over the next month with recommendations submitted to the CESU National Council by March 11, 2005. We greatly appreciate Dr. Perry Brown, leader of the RM CESU and Dr. Robert Alverts, USGS Science Advisor, for coordinating our external review. University and federal partner representatives may be hearing from one, or both, of our external reviewers over the next month. Thanks to everyone for their cooperation during the review process. **cv**

"We are proud of the accomplishments of the PNW CESU during its first five years of growth. Looking ahead, expanding partner involvement across the board remains a primary goal. Along with that objective is further development of the role of our minority institutions—so far they have participated in annual meetings and organizational planning but not as collaborators in actual projects. The next five years will provide the opportunity to work towards some of the broader goals of the CESU Network—facilitating more interagency and/or interdisciplinary projects and addressing issues of diversity in natural and cultural resource management." **From 2005 PNW CESU self-assessment**

Fourth CESU National Network Meeting

21-23 June 2005
Washington, DC

The Fourth National Meeting of the Cooperative Ecosystem Studies Units (CESU) Network will be held in Washington, DC on 21-23 June 2005. The National Meeting, held every two years, is a key event for the CESU Network. The 2005 National Meeting will be the first held since all 17 CESUs were established and the Network completed. Benefits of attending this event include:

- Significant opportunities for representatives from CESU-affiliated universities and other institutions to share their expertise and capacities with federal managers and decision-makers.

- Presentations by national leaders from the CESU Network's participating Federal agencies and departments on the future of managing federal lands and waters, including observations about their research, technical assistance, and education needs and priorities.
- Sessions on issues of interest to all CESU partners.

University faculty, administrators, and graduate students are encouraged to attend, as well as representatives of other institutions and federal natural and cultural resource managers. For more information visit the [CESU Web site](#) . **cv**

Updated PNW CESU Brochures Available

The PNW CESU is printing a new set of program brochures which will be available for distribution shortly. If you would like to receive copies of the new, updated brochure, please contact [Tracy Woodman](#).

March CESU workshop at University of Idaho and Washington State University

Introduction to Cooperative Ecosystem Studies Unit (CESU) Network
March 29-30, 2005

Goals of the workshop include: Help university administrators, faculty, staff, and graduate students take full advantage of opportunities. Increase awareness, knowledge and participation in the CESU.

Participants include the National Network Coordinator and the Deputy Director, and representatives from the PNW CESU and the RM CESU. For more information or to register <http://www.cnrhome.uidaho.edu/default.aspx?pid=77493> . **cv**

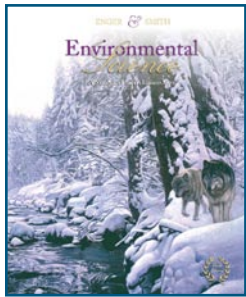
...Have news from your agency or institution to share? Send announcements to [Tracy Woodman](#) (woodmant@u.washington.edu) for inclusion in Cooperative Ventures, a quarterly publication of the PNW CESU.

Partner News

Important 2005 CESU deadlines for NPS, Pacific West Region

All NPS CESU Task Agreement and Modification paperwork must be submitted to the appropriate regional contracting office by July 15, 2005 to ensure obligation before the end of the fiscal year. Projects with work beginning this summer must be submitted by March 15, 2005. Remember all project work must be approved by the NPS Research Coordinator

(Darryll Johnson for the PNW CESU) before submission to the Oakland office. Allow plenty of time before these deadlines to work with the NPS Research Coordinator. The official Pacific West Region NPS CESU Memo for FY 2005 is on our web site. Read the full memo for complete information on procedures and deadlines. [cv](#)



Book Announcement:

Environmental Science: A Study of Interrelationships, Tenth Edition, Bradley F. Smith, Ph.D.

Environmental Science: A Study of Interrelationships, Tenth Edition, is a full-color, introductory environmental science textbook known for being concise, conceptual and value-priced. With the textbook's central theme of "interrelatedness", the authors clearly identify major questions and give appropriate examples that illustrate the complex interactions that are characteristic of all environmental issues. [cv](#)

For more information contact

Bradley F. Smith, Ph.D.

Dean

Huxley College of the Environment
Western Washington University

Kudos

Congratulations to University of Washington's distinguished professor Dr. Jerry Franklin, whose 2002 research paper, "Disturbances and structural development of natural forest ecosystems with silvicultural implications, using Douglas-fir forests as an example," has recently been recognized by Thomson-ISI as one of the most cited papers in the research

area of Environment/Ecology. The article, published in *Forest Ecology and Management*/155, January 2002, will be recognized as an Emerging Research Front topic in an ESI Special Topics feature in February, 2005. It will soon be available at <http://www.esi-topics.com/erf/index.html> . [cv](#)

Conferences & Lectures

Announcing a Conference on Science and the Northwest Forest Plan: Knowledge Gained Over a Decade

A 2-day conference will be convened to (1) develop awareness and understanding of science information from the Northwest Forest Plan monitoring programs, (2) describe advances in the state of knowledge over the last decade, and (3) explore policy and management implications of these findings. The conference audience will include policymakers, land managers, resource specialists, scientists, and interested publics.

Visit the Oregon State University, College of Forestry, Outreach Education Office Web site <http://outreach.cof.orst.edu/nwforestplan/index.htm> for complete conference information and registration.

Co-sponsored by NOAA, EPA, US FWS, USDA FS, BLM, NRCS, USGS, US ACE, NPS [cv](#)

"People, Places, and Parks: Preservation for Future Generations"

The George Wright Society Biennial Conference
on Parks, Protected Areas, and Cultural Sites
March 14-18, 2005 Loews Philadelphia Hotel

Every two years, The George Wright Society organizes and is the primary sponsor of the USA's premier interdisciplinary conference on protected areas. Registration going on now - for complete information visit <http://www.georgewright.org/2005overview.html> . [cv](#)



University of Washington: Lecture Series and Schedule

February 24, 2005

"Who Shapes the Visual Landscape ... and Does it Matter?"

Professor Gordon Bradley, Professor of Forest Planning, College of Forest Resources

March 10, 2005

"Exclamation, Accentuation, Punctuation; the Importance of Form & Textural Contrast in Garden Design & Plant Selection"
Dan Hinkley, '85, MS Forest Resources, UW 1985, International Plantsman & Horticultural Lecturer

For more information and register online go to: <http://www.UWalum.com/clubs/cfraa/2005cfrlectures.html> . [cv](#)