

Andrews Forest NEWSLETTER



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A National Synthesis of Long-Term Stream Chemistry Records

Long-term datasets offer invaluable information to measure the effects of land use and global change on water resources. Sherri Johnson of the Andrews Forest group and colleagues at several other sites are leading a synthesis of stream water nitrogen records from 11 Forest Service Experimental Forests, five of which are also LTER sites (Andrews, Luquillo, Bonanza, Coweeta, Hubbard Brook). This project has four synthesis objectives: comparison of long-term trends of stream nitrogen in reference basins, analysis of effects of disturbances

on stream nitrogen, comparison of methods for calculating of fluxes, and exploration of the relevance of these long-term nutrient data to the development of nutrient criteria for water quality regulation. An additional feature of this project is development of systems for storing and sharing long-term chemistry data. The Forest Service and LTER Network Office are supporting development of a prototype, StreamChemDB, a database and harvester system that will interface with the highly-successful climate and hydrology database harvesters, ClimDB and HydroDB.

Preliminary analyses by post-doc Alba Argerich are already turning up interesting findings, including that trends in reference watersheds vary with length of record used, and that adjacent watersheds within a site do not necessarily show similar responses. Comparison of responses to natural disturbances, such as hurricane, fire, insect outbreak, and forest management, indicate that following disturbance, all sites show increased stream nitrate concentrations. Reasons for varying magnitude and duration of increase are being explored. We anticipate many interesting findings to emerge from this continent-spanning study and from the groundwork it lays for work by others.

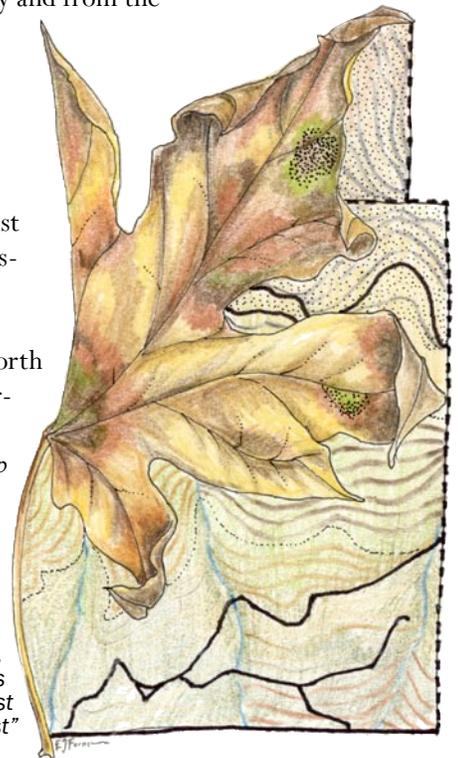


Mack Creek at the HJ Andrews Experimental Forest LTER. Photo by Tom Iraci, USFS.

Fresh Forest Views from Visiting Scholars

The Visiting Scholars program at Andrews Forest has taken interesting form over the past few years. To date ten scholars have visited—writers, scientists, artists, English professors. Scientist-writer Cristina Eisenberg (Oregon State University) based a chapter on old-growth for her recent book *The Wolf's Tooth* (Island Press, 2010) on the gestalt of Andrews Forest old-growth and the body of work emerging there. Botanist-artist Elizabeth Farnsworth (New England Wild Flower Society) and her husband, scientist Aaron Ellison (Harvard Forest), conducted a joint micro-sabbatical as visitors and combined art and natural history reflections (<http://andrewsforest.oregonstate.edu/research/related/writers/template.cfm?next=wir&topnav=169>). Aquatic ecologist Kurt Fausch (Colorado State University) will visit as a scholar in Fall 2011 to work on a book concerning rivers for a broad readership with sponsorship of a National Science Foundation OPUS grant. This is all part of the development of the role of the Andrews Forest as a center for cultural exploration and expression.

Color drawings by Elizabeth Farnsworth, a Visiting Scholar at the Andrews Forest in 2010. In describing her artwork, Farnsworth writes "I link the networks of veins of maple and networks between colonies of fungi that stimulate cytokinins (and greening) of leaves in maple...laid against a backdrop of the topographic map of the Andrews Forest"





HJ ANDREWS EXPERIMENTAL FOREST

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The H.J. Andrews Experimental Forest Where Ecosystems Are Revealed

The H.J. Andrews Experimental Forest is the hub of a cooperative program of research, education, and research-management partnership involving Oregon State University and the USDA Forest Service's Pacific Northwest Research Station and Willamette National Forest. The mission of this partnership is to support basic and applied research concerning forests, streams, and watersheds, and to foster strong collaboration among ecosystem science, education, natural resource management, and the humanities.



Letter from the Leadership

Several things have me in a reflective mood this spring: Anticipating my retirement (sometime next year); the recently-completed 30-year review of the National Long-Term Ecological Research (LTER) program; assembly of a set of papers for *BioScience* on the occasion of the 30th anniversary of the LTER program; and our own Andrews mid-term review coming up this August. I'm impressed! The LTER program has been a stunning success—and perhaps most so in terms we don't usually use as standards. Yes, LTER has made important progress on the original objectives of starting long-term experiments, building understanding of complex ecosystems, and communicating that understanding in terms useful to management of the world's resources. But the most important accomplishment has been nurturing a community of more than 2,000 scientists and students spread over several hundred institutions and working at the 26 LTER sites. The collaborative spirit of this community greatly facilitates the conduct of multi-site science at the continental scale.



An important feature of LTER work, and a sign of LTER's 30 years of maturation, is that "outreach" has moved beyond simple transfer of science information to active cooperation between the producers and users of knowledge—scientists and the LTER programs expressing active citizenship. The Andrews Forest program has been particularly effective in this form of citizenship in our region through a variety of avenues—education programs for middle- and high-school students and teachers; our distinctive, decades-long research-management partnership with the Willamette National Forest; and cultural contributions of the Long-Term Ecological Reflections program. The future scenario studies of the Willamette Basin Futures project and the Blue River Landscape Plan carry lessons from science into the public arena.

All this gives me great pride to be associated with LTER and makes me confident in the bright future of the program.

—Barbara Bond, Lead Principal Investigator of the Andrews Forest LTER, Ruth H. Spaniol Chair, Department of Forest Ecosystems and Society, Oregon State University (photo by Cheryl Hatch/OSU).

Student Spotlight—Sarah Frey



Sarah Frey sits atop a canopy tower in the Amazon of Ecuador. Photo by Sarah Frey.

After studying birds across the Americas, from the Green Mountains of Vermont to the Amazonian Ecuador, Sarah Frey made her way to the Cascades Mountains of Oregon to start her PhD at Oregon State University as part of the NSF Ecosystem Informatics Program in the Departments of Geosciences and Forest Ecosystems & Society.

Frey started long-term monitoring of birds across the Andrews Forest in 2009 in order to understand what drives bird distributions in mountainous environments and how they change over time, both within and between breeding seasons. She also aims to understand how mountain landscapes, like the Andrews Forest, might have the ability to buffer birds from the effects of macroclimate changes through the influence of microclimate "refugia."

Frey's preliminary results reveal that a Neotropical migrant, the Hermit Warbler, tends to vacate sites that show larger increases in temperature over the breeding season compared to more "buffered" sites that stay cooler.

Frey enjoys being involved in the Andrews Forest community by serving as an LTER Graduate Representative.

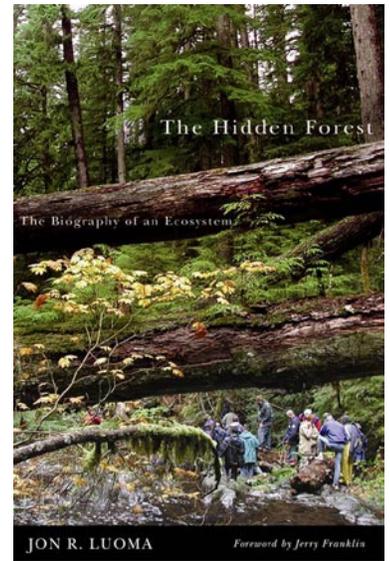
Faculty Faces— Hannah Gosnell



Hannah Gosnell is Associate Professor of Geography in the Geosciences Department at Oregon State University, where she is affiliated with the Rural Studies Program, the Institute for Water and Watersheds, and the Oregon Climate Change Research Institute, as well as the Andrews Forest LTER program. Her research interests have to do with the drivers and consequences of rural land use change, water resource management, and environmental governance in the American West; and the ways in which laws and institutions might evolve to better reflect changing geographies. As part of her work with the Andrews Forest program, Gosnell is involved with the Maps and Locals project (MALs), along with Denise Lach and graduate student Tim Inman. MALs is a collaborative effort across eleven LTER sites involving GIS-based analyses of land cover/land use change over time, and collection of local ecological knowledge. Goals are to 1) identify the processes driving long-term change at the collaborating sites, and 2) specify the relevant spatial and temporal scales at which those processes should be studied. Through cross-site comparison of these results, the collaborators hope to clarify the mechanisms linking social and ecological drivers, including feedbacks and historical thresholds of change between regimes or relatively stable states. This should enable development of a common set of theories, methods, and hypotheses for further research into social-ecological systems across multiple scales.

Where Are They Now? — Jon Luoma

Jon Luoma, science writer and contributing editor at *Audubon* magazine, published seven articles about Andrews Forest science and its management implications in outlets such as *Audubon*, *Discover*, and *New York Times* between 1990 and 1995. In 1999 he culminated a decade-long interaction with the Andrews Forest community when he published *The Hidden Forest: The Biography of an Ecosystem* (Henry Holt). Set in the Andrews Forest, this well-received account of science, scientists, and the forest itself has been used in college courses, book groups, and as pleasure reading by a wide audience. In 2006 Oregon State University republished *The Hidden Forest* with a new Foreword by Jerry Franklin. In the past decade Jon has turned his attention to some college teaching, writing for the *environment: YALE* magazine, and other venues. He has not undertaken another book, “maybe because the Andrews story is a hard act to follow,” he confesses. We heartily thank Jon for telling the Andrews Forest story to so many who would not know it otherwise. Please note that *The Hidden Forest* is still in print and makes a great gift for friends and family.



Linking Land Managers and Researchers

The Central Cascades Adaptive Management Partnership (CCAMP), through the leadership of Science Liaison Cheryl Friesen, has been providing opportunity for communications among land managers, researchers, and the broad public on diverse themes. Several workshops have been convened over the past several years to explore the significance of “ecosystem services” and to help articulate the broad suite of

benefits rendered by public lands. The most recent workshop (April 13, 2011, in Springfield, Oregon) brought together leaders of the Willamette and Deschutes National Forests, including Supervisors Meg Mitchell and John Allen, with a total of 60 people from many federal and local agencies, citizen groups, industry and environmental groups, and universities. The gathering was structured to give many voices the chance to be heard.



A hydrologist surveys Mack Creek at the Andrews Forest. Water as an ecosystem service provided by forests was a topic covered at a April CCAMP meeting. Photo USFS.

The general consensus seemed to be that the “ecosystem services” idea is a step in the right direction—to recognize the many strong ties among forests, watersheds, and people—but the concept is burdened with some vocabulary that limits its usefulness to a degree. A critical feature of this workshop was the free exchange of a wide variety of views, which is an objective of the CCAMP programs.

Long-Term Ecological Reflections

Many recent events indicate strong and growing interest both within and beyond the Long-Term Ecological Research (LTER) community in developing programs that encourage interactions among the humanities, arts, and sciences to understand ecosystems and our place within them. Representatives from a dozen LTER sites and two arts/education/outreach centers gathered at the Andrews Forest May 6-8, 2011, to advance this work. This event was sponsored by the LTER Network Office and hosted by the Andrews Forest LTER program and the Spring Creek Project for Ideas, Nature, and the Written Word.

In the misty, ancient forest, workshop participants came to these perspectives:

- Core features of these collaborations: Openly share views across humanities, arts, and sciences; take the long view; capitalize on the power of place; assemble, archive, and actively share outcomes of the work.
- Objectives: Develop programs that bring together people from the humanities, arts, and sciences to share understanding of the natural world and its cultural meaning and values, as these change over generations.
- Relevance to NSF projects: This work fits well with both the Broader Impacts and Intellectual Merit evaluation criteria of NSF proposals. It is more than reporting science findings; artists and humanists have insights to the meaning of place and the work of science that are not known to scientists.
- The disciplines involved potentially range across the humanities (creative writing, environmental philosophy and history), the arts (visual, dance, music, drama), and sciences (ecology, earth and social sciences).
- Networking: A communications network for internal and external sharing of information and accomplishments would greatly aid development of participating sites and enhance dissemination of the work.

Workshop participants are following up on a list of action items.

Teachers as Researchers

Teachers as Researchers is part of the NSF-funded Schoolyard LTER program at the Andrews Forest. The program provides a series of teacher training workshops designed to provide activities and interactions that are experiential, relevant, and applicable to the teachers' classroom practice. In early May, fifteen Oregon middle- and high-school teachers convened at the Andrews Forest for a workshop led by the Oregon Natural Resources Education Program. Teachers worked with Andrews Forest researchers to collect data for a long-term phenology project. Specifically, and despite the lingering snowpack, the teachers examined spring emergence of insects using a technique called leaf turning.

The success of the teacher-researcher interactions is apparent from the feedback from the teachers: "Taking



A teacher participant measures bud break of Douglas fir at the Andrews Forest. Photo by Mark Schulze, OSU.

the time to do real data collection led to many questions and insights about field science" and "the field research practice and ideas allowed me to figure out how to break it down for my students when we do it in the classroom." Three additional workshops are planned for 2011.



Mack Creek old-growth at the Andrews Forest. Photo by Tom Iraci, USFS.

Please Support the Andrews Forest

The Andrews Forest Program is dedicated to research and education about forests, streams, watersheds, and our engagement with the land.

The Andrews Forest Fund enables individuals and organizations to support the important work at the Andrews Forest. There are many opportunities for support—from Spotted Owl research, to writer and scholar residency support, to support for research and student programs.

By making a contribution to the Andrews Forest Fund, you can make an investment in the long-term viability of our forested ecosystems and in the training of future forest scientists, educators and managers. Tax-deductible donations of funds, appreciated securities, or property of any amount can be used to support the Andrews Forest Program. To make a gift, please contact the OSU Foundation (800-354-7281) or go to our online giving page at:

<http://andrewsforest.oregonstate.edu/about/forestfund.cfm?topnav=171>