

Andrews Forest NEWSLETTER

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Andrews Forest History Project

The Andrews Forest has a wealth of historical information; not only in the realm of ecosystem research, but also in its 65-year history of development as a highly productive program for science, education, and collaboration with land managers. A new Andrews Forest History Project is underway to locate and archive records of the history of the Andrews Forest program and to collect new records using oral history techniques. Professor Anita Guerrini (History, OSU) and historian Sam Schmieding (Forest Ecosystems and Society, OSU) are in the process of archiving appropriate material in a new Andrews Forest Collection in the OSU Archives. The history of the program is recorded in hundreds of linear feet of file space of historical material (correspondence, successful and unsuccessful grant proposals, reports, etc.), thousands of photographs, and maps scattered over a half dozen locations on campus and at the forest headquarters.

Future study of these records and the oral histories will help reveal keys to past successes and also shortcomings. Social science research on the nature of communications among scientists, land managers, policy makers, and news media during periods of major change in forestry policy may give clues to program management in the future. The National

Science Foundation, a chief sponsor of LTER, has used success of the LTER program to launch several other continent-scale research and monitoring networks, so learning about the history of administration of LTER sites will be very relevant to charting the future of these other terrestrial, freshwater, and marine programs. The programmatic history of the Andrews Forest may also yield lessons for other Forest Service Experimental Forests and Ranges.



50 Years of Vegetation Change



Vegetation crew members Sarah Ward (left) and Katie Hogan (right) taking understory measurements in 2013, more than 50 years after the plots were established. Photo by Charlie Halpern.

The abundant herb and shrub communities that develop after disturbances such as logging or burning are drawing increasing attention as critical habitats for many invertebrates, birds, and other animals. Permanent vegetation plots established by Ted Dyrness in 1962 in two clearcut and burned watersheds of the Andrews Forest provide the longest, most detailed records of changes in understory vegetation as these systems revert to closed-canopy forests. In a recent publication, Charlie Halpern (University of Washington) and Jim Lutz (Utah State) observed that over three decades of measurement in Watersheds 1 and 3, tree cover increased fourfold, and biomass more than two orders of magnitude. Surprisingly, during the same period, understory species richness and cover declined an average of only 30-40% and, in many plots, there was no evidence of a decline. For plots that declined in richness or cover, the decrease was largely attributable to loss of early-seral species, such as fireweed and ceanothus, that established soon after disturbance. In contrast, forest understory species that survived disturbance, persisted despite closure of the tree canopy. These findings run counter to a common perception that trees exert strong controls on understory vegetation during canopy closure. They also highlight the importance of long-term studies for elucidating patterns and processes that cannot be understood from short-term experiments or space-for-time substitutions.



HJ ANDREWS EXPERIMENTAL FOREST

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Editors:

Lina DiGregorio, OSU
Fred Swanson, USFS

Contact:

Andrews Forest Newsletter
College of Forestry
330 Richardson Hall
Oregon State University
Corvallis, OR 97331-5752

andrewsnewsletter@fsl.orst.edu

Website:

<http://andrewsforest.oregonstate.edu>

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

I often sign my emails "Best, Michael." Sometimes I'm moving too fast and I accidentally write "Beset, Michael." Sometimes I misspell my own name, too. Our LTER7 grant is due in March. We are beset ("covered or surrounded") with a barrage of tasks and planning meetings, and wonderful conversations about the science we will do together for the next six years. We will soon have a draft of that proposal ready for friendly reviews. This past year, my first in the role as Andrews Forest LTER Principal Investigator, has been beset by a steep learning curve, but the good fortune to be surrounded by colleagues who know how to push and pull up steep inclines. And as our region is beset with serious environmental challenges and decisions, I am impressed with the amazing relevance of philosophical analysis to the environmental issues that dominate the Pacific Northwest. Thankfully, we know from the past that when beset ("troubled persistently"), this is a group that is at its best.

—Michael P. Nelson, Principal Investigator of the Andrews Forest LTER, Ruth H. Spaniol Chair,
Department of Forest Ecosystems and Society, Oregon State University



Michael Nelson at the Andrews Forest. Photo by Lina DiGregorio

Student Spotlight—Scholars and Leaders

We commend three PhD students for their on-going scholarship and for serving in the elected position of graduate student representative in the Andrews Forest LTER program. Sarah Frey Hadley (Forest Ecosystems and Society) completed her term as grad student representative a year ago, and she is in final stages of her research on the distribution of song-bird species over the seasons and across the Andrews Forest landscape. Sarah's work has been amazingly field intensive with 4 am departures to begin miles of off-trail clamoring over rugged terrain to visit 180 sites where birds are censused by their songs. Kathleen Moore (Geography) is about to complete her term as grad student representative. Originally from South Africa, Kathleen has taken her background in economics research into the environmental realm by using economic modeling to examine tradeoffs

involved in management of reservoirs within the Willamette River basin, with special emphasis on recreation, flood control, and summer flows to support fish habitat and irrigation of agricultural lands. Christina (Chrissy) Murphy (Fisheries and Wildlife) is early in her term as grad rep. Her dissertation topic concerns changes in nutrients and food webs as means for understanding growth and survival of juvenile salmonids in three of the Corps of Engineers' 14 major reservoirs in the Willamette River basin, including Blue River Reservoir at the mouth of Andrews Forest. She is particularly interested in identifying changes in reservoir conditions resulting from new extended drawdowns done to favor anadromous fish passage.

Thanks to each of these young scientists for their scholarship and their leadership within the LTER community and across the 25-site US LTER network.



Sarah Frey Hadley (left), Chrissy Murphy (center), and Kathleen Moore (right).

Faculty Faces—Alba Argerich, Ivan Arismendi, Dana Warren

Three young scientists are pursuing important aquatic research projects associated with the Andrews Forest program.

Alba Argerich, Assistant Professor (Senior Research) in the department of Forest Engineering, Resources & Management at OSU, works in conjunction with Forest Service scientist, Sherri Johnson, to assemble, clean, and analyze long-term records of streamwater chemistry from eight Forest Service Experimental Forests around the country (see our Spring newsletter for a report on a publication from this project). Originally from Catalonia (Spain), Alba has plowed through vast quantities of hydrology and chemistry data, seeking patterns that may reveal changes in natural processes and human activities that may

affect atmospheric chemistry and the ability of vegetation to retain nutrients delivered to a watershed as dust and in precipitation. Alba is currently working on the stream carbon budget for WS1.

Ivan Arismendi, Assistant Professor (Senior Research) with Fisheries and Wildlife at OSU, studies long-term records of water quality, especially temperature, and distributions of native and introduced fish species. He has done similar work in his native Chile where he worked in the massive Valdivian rainforests on the west slope of the Andes in landscapes with similarities to the Pacific Northwest. He observes that most of the salmonids inhabiting the Pacific Northwest have become successful invaders in South America. Ivan is particularly interested in comparing

those physical and ecological processes in freshwaters that may explain salmonid distributions across the Americas.

Dana Warren, Assistant Professor (Senior Research) and Instructor in the department of Fisheries and Wildlife, completed his graduate training in aquatic ecology at Cornell University where he worked on a range of projects in northeastern US streams. Dana's current research efforts use the unique forest management history at the HJA to explore how variability in riparian forest age and structure influences light, nutrient cycling and bottom-up drivers of fish and salamander production in headwater streams. Dana is supervising a masters student, Matt Kaylor, and an undergraduate honors student, Brian VerWay, as part of this project.



Alba collecting water samples at WS1.
Photo by Jay Zarnetske



Ivan Arismendi at the Andrews Forest.
Photo by Ivan Arismendi.



Dana Warren presents at HJA Day 2013.
Photo by Lina DiGregorio

Willamette National Forest Update—The Human Dimension of Natural Resource Management: Are We Plugged In?

This past spring, the Central Cascades Adaptive Management Partnership (CCAMP) organized a one-day workshop that highlighted the wonderful resources we have on hand to help us understand the social component of natural resource management. A healthy relationship between humans and their environment requires ecological knowledge, and we invest heavily in environmental education to develop an informed society. Social scientists remind us that attitudes and values also play strong roles in how humans interact with their environment. As the Forest Service moves into a new area of increased collaboration, we are tapping into the social sciences fields to gain a better understanding of the “human element.”

At the workshop, OSU professors Bruce Shindler and Michael Nelson reminded us that there is no one “public” and that

decision making is a very messy process. Michael pointed out that even though we'd like to think that people go through a systematic process for their decision-making, this is probably an unwise assumption. He concluded by saying, “Ethical discourse is not about defeating anything; it is about discovery.”

PNW Research Station social scientists Dale Blahna, Lee Cerveney, and Paige Fischer described how existence of social networks and people's strong feelings about specific places can motivate engagement with the land and address the “why care?” question.

Land management agencies rarely enter collaborative efforts by describing it as a process for discovery, but we should! The experience and fresh perspectives of our social scientist partners will help us grow and learn.

Long-Term Ecological Reflections

As the Long-Term Ecological Reflections program completes its first decade, a gathering at the Andrews Forest this fall considered the next decade of the program. One objective is to find ways to gather more reflections from scientists, and do so in collaboration with creative writers. Botanist-writer Robin Kimmerer is a rare person, wonderfully accomplished in both worlds. In the chapter *Witness to the Rain*, set in the Andrews Forest and published in her new book *Braiding Sweetgrass* (2013, Milkweed), Robin reflects, “Listening, standing witness, creates an openness to the world in which the boundaries between us can dissolve in a raindrop. The drop swells on the tip of a cedar and I catch it on my tongue like a blessing.” In a chapter titled *Burning Cascade Head* she considers, “Science can be a way of forming intimacy and respect with other species that is rivaled only by the observations of traditional knowledge holders. It can be a path to kinship.” Robin joined the fall gathering to chart the next decade of the Reflections program.

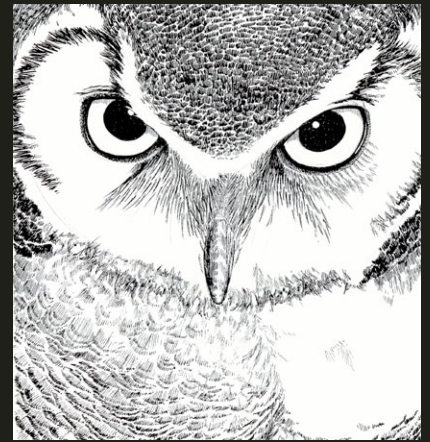
Restoration of Montane Meadows



Bunchgrass Meadow field crew of 2013 included (from left to right) Arianna Goodman, Laura Benton, Liam Beckman (RAHSS), Nicolas Kremer (research intern, France), Jeremy Magee (RET), Shan Kothari (REU), Zak Weinstein, Shannon Ritz (RAHSS), Jessica Celis, and Betsy Gabriel (USFS). Pictured in the Bunchgrass Meadow with forest patch behind. Photo by Charlie Halpern.

The Bunchgrass Ridge Restoration project led by Charlie Halpern had two landmark accomplishments this summer. First, his field crew was supported by an unusual diversity of programs. In addition to a crew of four undergraduate and post-graduate students, participants included a high school teacher in NSF’s Research Experience for Teachers (RET) program, two students in NSF’s Research Assistantships for High School Students (RAHSS) Program, an undergraduate in NSF’s Research Experience for Undergraduates (REU) Program, a French student intern, and a USFS summer employee. The result was a summer of research and education, bringing together individuals with diverse backgrounds, experiences,

and interests. Second, the crew completed a year-8 remeasurement of tree-removal plots treated with or without fire, and adjacent “reference” meadows, as part of an unusually detailed and long-running restoration experiment in high-mountain meadows. Results to date suggest that fire is not critical to shifting dominance from forest understory back to meadow species; tree removal alone, may be sufficient. However, the experimental plots still lack many species present in adjacent, uninvaded meadows, suggesting that seed dispersal may be slow or limited. The Willamette National Forest has been a vital partner in conducting this study, a user of the resulting information, and a champion of outreach to other land managers.



Western Screech Owl (*Megascops kennicottii*). Illustration by M.L. Herring.

Support for 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.

We extend our thanks for recent contributions: Donations of cash and items helped to furnish the new GREEN House residence building, which now hosts visiting scholars and artists. A donation of books from Mary Braun at OSU Press enriched the library at the Headquarters. Other private donations supported researching chemistry in Watershed 1, running the middle-school Canopy Connections program, and developing interpretive materials for the new Discovery Trail at the Andrews Forest Headquarters.

The Andrews Forest program has many other funding opportunities, such as support of students and research programs. Please be a part of the Andrews Forest program by making a contribution. Call 541-737-8480, or donate online: <http://andrewsforest.oregonstate.edu/donate>