

# Andrews Forest NEWSLETTER



Issue 2

Spring 2007



## Science of Decomposition

Intriguing findings from the 10-year Long-Term Intersite Decomposition Experiment (LIDET), coordinated by Mark Harmon, are reaching print. During his recent Harvard Forest sabbatical, Harmon worked on ten or so publications on this 21-site experiment spanning Costa Rica to the North Slope of Alaska. The first paper appeared recently in the journal *Science*. The paper, *Global-Scale Similarities in Nitrogen Release Patterns During Long-Term Decomposition* (Parton et al. *Science* 315:361-364. [www.sciencemag.org/cgi/content/full/sci;315/5810/361](http://www.sciencemag.org/cgi/content/full/sci;315/5810/361)), shows that net nitrogen release during leaf and fine root decomposition is driven dominantly by initial nitrogen concentration in the original tissue and the mass remaining, regardless of climate, soil conditions, or biota. If the litter is rich in nitrogen, this element is continuously released. However, if the litter is poor in nitrogen, a period of immobilization occurs, the length of which increases as the nitrogen concentration decreases. The speed at which this trajectory is followed depends on both the quality of the litter and the climate in which it decomposes. So the progression is faster in the tropics than in the tundra. A series of papers has been submitted to *Global Change Biology* that examines the generality of a “stable” phase of decomposition, the global scale controls of the decomposition process, the development of a general decomposition model, and the control of climate on decomposition above- versus below-ground. More papers will follow, including a summary review, an analysis of climate change impacts on global decomposition processes, and a comparison of model predictions to data from other similar projects in Canada and Europe.

Left: Litter decomposition experiment at the HJ Andrews Experimental Forest. Photo by Jay Sexton.

## Experimental Forests – LTER meets Forest Service

The system of 78 Experimental Forests and Ranges of the USDA Forest Service is an important national environmental observatory system. The Long-Term Ecological Research program and the Forest Service intersect at a series of these sites such as the Andrews Forest, Hubbard Brook (NH), Luquillo (PR), and Coweeta (NC). The following new publication describes the Experimental Forest and Range system, its science history, and the links with natural resource management dating back nearly a century: Lugo, A. E.; Swanson, F. J.; González, O. R.; Adams, M. B.; Palik, B.; Thill, R. E.; Brockway, D. G.; Kern, C.; Woodsmith, R.; Musselman, R. 2006. *Long-term research at the USDA Forest Service’s experimental forests and ranges*. *BioScience*. 56(1): 39-48. [www.fsl.orst.edu/lter/pubs/webdocs/reports/pub3843.pdf](http://www.fsl.orst.edu/lter/pubs/webdocs/reports/pub3843.pdf).

## New Truffle Species Unearthed

A new truffle species was discovered in the Andrews Forest. Mycologist Dan Luoma reports that, “we are progressing with further molecular analyses toward publishing the new species of truffle from the HJA.” The discovery of this yet-unnamed species is an interesting new step in the long history of studies of the complex fungal communities of the Andrews Forest.

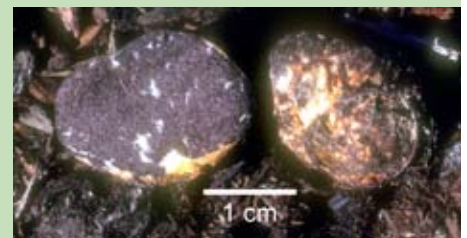


Photo by Steve Miller



HJ ANDREWS EXPERIMENTAL FOREST

## The Andrews Forest Newsletter Issue 2 Spring 2007

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 the 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.

The Andrews Forest Newsletter is produced each spring and fall at Oregon State University, in Corvallis, Oregon.

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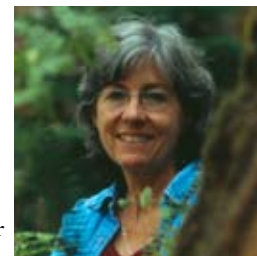
[www.fsl.orst.edu/lter](http://www.fsl.orst.edu/lter)

*This issue of the Andrews Forest Newsletter was produced by Lina DiGregorio and Fred Swanson. Design consultation by Santiago Uceda.*



## Letter from the Leadership

As we look forward to celebrating the 60th Anniversary of the Andrews Forest next year, we're also starting to develop the proposal for our sixth LTER proposal, or "LTER6", due in February 2008. At the same time, the national LTER network is in the midst of an ambitious planning effort that integrates natural science and social systems across the 26-site network. In laying the foundation for our future, we aim to maintain the core strengths that have made the Andrews Forest such a phenomenal center for forest and water science research over the past 60 years, including the long-term measurement programs that become ever more valuable with time, our strong research-land management partnerships, and our collegial, multidisciplinary approach to science and knowledge. We are also moving forward with new initiatives — expanding education and outreach efforts, creating new connections with math, engineering, and computer science, and maturing our collaboration with the humanities. Visitors to the Andrews Forest are likely to encounter high-tech sensor networks that are helping us explore nuances of the impacts of climate change on our landscape, a group of scientists and managers conferring about how best to maintain healthy forests in the face of climate change, and a solitary poet recording impressions that will become part of a long-term chronicle of change and development in our forests — all in a single watershed. These are exciting times for the Andrews Forest!



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



Teachers at The SMILE teachers workshop at Oregon State University in Corvallis, Oregon. Photo by Lina DiGregorio

## SMILE: Teachers model long-term research

The Science and Mathematics Investigative Learning Experiences (SMILE) Program of Oregon State University provides science, technology, engineering, and mathematics enrichment and mentoring to historically underserved student populations, providing support for them to pursue higher education. Through the National Science Foundation supported Schoolyard LTER program, the Andrews Forest LTER is working with the SMILE Program to bring its research and expertise to SMILE teachers. Andrews' scientists have participated in teacher workshops since 1994, providing technical expertise and talking with teachers about designing schoolyard investigations.

The SMILE Program hosted a teacher professional development workshop on the Oregon State University campus in February. Seventeen teachers from twelve school districts in Oregon attended the workshop. The goal of the workshop was to support SMILE teachers in planning activities for their after-school clubs. Some of the activities, such as those on plant physiology and bird migration, are designed specifically to model long-term data collection projects similar to those taking place at the Andrews Forest under the LTER initiative.

[www.fsl.orst.edu/lter/edu/schoolyard/smile.cfm?topnav=125](http://www.fsl.orst.edu/lter/edu/schoolyard/smile.cfm?topnav=125)





## Research Experience for Teachers

Larry Byman, a Biology and Environmental Field Studies teacher in Longview, Washington, worked with Andrews Forest scientists during the 2006 field season to learn about long-term data collection and data management techniques. Based on what he learned at the Andrews Forest, Byman developed an environmental curriculum for use at the Longview District's Wake Robin Outdoor Learning Center. "This ranks as one of the absolute best learning experiences I've had during my teaching career," said Byman. His lessons cover topics such as litter decomposition, moth diversity, soil seed bank, stream cross sections, and tree growth rates. Byman's lessons are available through the Wake Robin Outdoor Learning Center's website, [www.longview.k12.wa.us/wr/LTER](http://www.longview.k12.wa.us/wr/LTER).

Kurt Cox, a junior high science teacher from the McKenzie School District, developed a set of research activities on the McKenzie High School grounds which is based upon research being conducted at the Andrews Forest. The seventh and eighth-graders will visit the Andrews Forest LTER site in the fall and spring to conduct vegetation surveys, examine log decomposition, and measure stream structure.

The Research Experience for Teachers program is funded through grants from the National Science Foundation. More information on educational activities of the Andrews Forest program is available at [www.fsl.orst.edu/lter/edu/schoolyard/ret.cfm?topnav=156](http://www.fsl.orst.edu/lter/edu/schoolyard/ret.cfm?topnav=156).

*Above: Teacher, Kurt Cox (center, pointing) works with junior high school students at the Andrews Forest. Photo by Kari O'Connell.*

## Radio Journey to the Andrews Forest

The Andrews Forest Lookout Old-growth Trail was featured on John Cooney's weekly radio show, *The Natural World*. The show aired on Oregon Public Broadcasting's KLCC on November 9, 2006, and is available for listening online. To hear the program and the sounds of the Andrews Forest, click on the "A Hike Through Old Growth at H.J. Andrews Experimental Forest 11/9/06" link at [www.klcc.org/listen/NaturalWorld.html](http://www.klcc.org/listen/NaturalWorld.html)

## Student Spotlight



Over the course of MS and PhD degree programs, Dan Sobota has participated in multiple components of the science community at the Andrews Forest. While

serving as elected leader of the Andrews Forest graduate students, Sobota helped convene the first gathering of graduate student leaders from across the LTER network. His PhD project is part of the LINX (Lotic Intersite Nitrogen eXperiment) study, and he just returned from an internship at Oak Ridge National Lab in Tennessee, another site in this collaborative study of stream ecosystems. Sobota is in the Department of Fisheries and Wildlife and in the Ecosystem Informatics program at Oregon State University.

## Where Are They Now? *This will be a regular part of the Andrews Forest Newsletter to keep you posted on alumni.*



As Ranger at Blue River Ranger District from 1984 to early 1989, Steve Eubanks (*left*) was a strong advocate for a strong research-management partnership. He worked closely with Andrews Forest researchers to develop, apply, and test on-the-ground the concepts of ecosystem management that included such things as retention of green trees and coarse woody debris in harvest areas and developing approaches for minimizing forest fragmentation.

Steve is now (*right*) Supervisor of the Tahoe National Forest in the Sierras of California, where he faces challenges of protecting the important ecological and social values of fire-prone forests that have experienced large buildups of biomass due to decades of fire suppression. Steve currently serves on the national Working Group

for Experimental Forests and Ranges and worked with the Pacific Southwest Research Station Director, Jim Sedell, another Andrews Forest alum, to establish the Sagehen Experimental Forest in the eastern Sierras on the Tahoe National Forest.

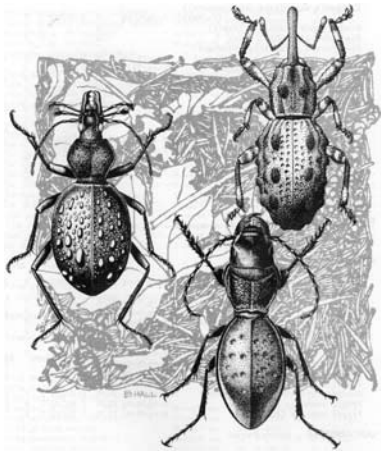
Steve says, "One of the most valuable parts of my career was early-on when I had the good fortune to establish a relationship with research and to see the benefits that can accrue when researchers and managers work closely together. The synergy that has come from the research-management partnership I have been privileged to participate in has, I believe, had a positive influence on national forest management in general. This kind of research-management relationship has always been important, but is becoming even more so as pressures on forests have increased."



## Reflections

The Long-Term Ecological Reflections program continues to grow, as the 12th writer in residence arrives in Spring 2007. In Fall 2006 writers from across the Northwest gathered at the Andrews Forest to share ideas and energy in what is planned to be a biennial event.

Here is an excerpt from the poem “The Web,” published in *Orion* (2007), by recent writer-in-residence Alison Hawthorne Deming (see the Andrews Forest webpage for more of Deming’s writings, [www.fsl.orst.edu/lter/research/related/writers.cfm?topnav=167](http://www.fsl.orst.edu/lter/research/related/writers.cfm?topnav=167)):



Carabid beetle, *Cychrus tuberculatus* (left); flightless tiger beetle, *Omus dejeani* (bottom); weevil, *Lobosoma horridum* (top). From the Parsons et al. Forest Service publication on invertebrates of the Andrews Forest. Illustration by Bonnie Hall.

*Is it possible there is a certain  
kind of beauty as large as the trees  
that survive the five-hundred-year fire  
the fifty-year flood, trees we can't  
comprehend even standing  
beside them with outstretched arms  
to gauge their span,  
a certain kind of beauty  
so strong, so deeply concealed  
in relationship—black truffle  
to red-backed vole to spotted owl  
to Douglas fir, bats and gnats,  
beetles and moss, flying squirrel  
and the high-rise of a snag,  
each needing and feeding the other—  
a conversation so quiet  
the human world can vanish into it.*

## Mountain Meadows—Here Today, Gone Tomorrow?

Mountain meadows in the Pacific Northwest are sites of remarkable biological diversity in a landscape dominated by coniferous forests. Lush meadow plant communities attract rich assemblages of arthropods and birds, and provide habitat for small mammals and other wildlife. Recent encroachment by conifers has reduced the extent and ecological integrity of meadows, with consequences for their biota, scenic values, and recreational use.



Andrews Forest researcher Charlie Halpern (University of Washington) and McKenzie River Ranger District staff have teamed up to investigate effects of forest cutting and burning treatments in restoration of Bunchgrass Meadow in the High Cascades just east of the Andrews Forest. With funding from the Inter-agency Joint Fire Science Program, University of Washington Master of Science students Nicki Lang and Ryan Haugo investigated seed banks and the history of forest encroachment into the meadow. A set of the 1-ha experimental plots was logged over snow and then District staff burned slash and ground vegetation in selected plots.

This experiment is part of a larger system of coordinated studies addressing changes in the history, current extent, and conditions of Cascade mountain meadows and other non-forested habitats, the causes and ecological consequences of these changes, and the potential for restoration by several methods.

Above: Burning of slash piles in a plot where trees were removed in the Bunchgrass Meadow restoration experiment, fall 2006. photo: USDA Forest Service



Old growth in the Andrews Forest. photo by Tom Iraci.

## Legacy for the Future: Andrews Forest Fund

The Andrews Forest is a national and international resource for science, land management, education, and the humanities, dedicated to learning about forests, streams, watersheds, and our engagement with the land. Andrews Forest science of old-growth and managed forests, forest landscapes, biological diversity, and watershed processes has strongly influenced ecosystem science and helped shape natural resource policy and management across the region and worldwide. This work is funded largely by the State of Oregon through the University, the USDA Forest Service, and the National Science Foundation, but many critical opportunities are not met by these sources — this is where gifts from individuals can make a big impact.

We enjoy the legacy of the forest itself and the efforts of the many people who have worked there; in a spirit of appreciation and hope, we intend to leave a legacy of ideas, inspirations, understanding, and experiments for future generations. Please join us in leaving a legacy by making a contribution to the Andrews Forest Fund.

The Andrews Forest Fund is a way for individuals and organizations to support research, outreach and education, and ecological monitoring. To make a gift, please go to our online giving page [www.fsl.orst.edu/lter/about/forestfund.cfm?topnav=171](http://www.fsl.orst.edu/lter/about/forestfund.cfm?topnav=171) or contact Lisa French at the OSU Foundation (541-737-2900).