



# NORTHWEST OREGON ECOLOGY GROUP NEWSLETTER

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March 2005

The Northwest Oregon Ecology Group is an association of ecologists with a wide range of interests from the Mt. Hood, Siuslaw and Willamette National Forests, the Columbia River Gorge National Scenic Area, and the Eugene and Salem Bureau of Land Management Districts. The group works from local to regional scales to provide tools, assessments, and analyses for ecological issues for planning, managing and monitoring forest ecosystems in NW Oregon. Through their own efforts, and affiliation with ecologists with Oregon State University, University of Oregon, Oregon Department of Fish and Wildlife, and private consultants, they have developed products most resource managers use every day.



## Wetlands After Wild Fire

Cindy McCain, Ecologist, Siuslaw and Willamette National Forests

Torrey/Charlton Research Natural Area on the Middle Fork RD, Willamette NF, lies just north of Waldo Lake. The RNA contains a variety of wetlands and small lakes on the gently rolling high elevation plateau. In 1993, a set of transects crossing from forest through wetlands was established to monitor vegetation dynamics across the ecotone between the ecosystems. In 1996, the 10,000 acre Charlton Fire roared across the area.

The NW Oregon Ecology Group and partners have been monitoring the recovery of the wetlands. In the 8 years of data collection, we have documented the response of the wetlands. In the wet zones, we saw rapid recovery of the original species to pre-disturbance abundance. The margins have more woody species which are slower to return to their earlier cover. The forested ends of the transects are very slow to recover the understory.

The fire caused nearly complete mortality near the study wetlands. Lodgepole pine seedlings are sparse. Forest regeneration is slow in the severely burned old growth stand.

The biggest pulse in snag fall seems to have begun in 2003. Fine twigs are disappearing; bark is sloughing; tops are beginning to come down. The rebar marking the ends of some of the transects has been nearly buried in fallen branches. As more of the old stand drops out of the canopy, logs drop into the wetlands. This creates microsites for species requiring better drainage. The opening up of the surrounding stands also means that the temperature/snowpack conditions of the wetland will see ongoing changes.

This monitoring project at Torrey/Charlton RNA illustrates the great value of Research Natural Areas in focusing studies of critical examples of our ecosystems, and collecting data for understanding dynamics of these communities under natural conditions.

[Cindy McCain (NWO Ecology Group), Jenny Lippert (Willamette NF Forest Botanist), and Sarah Greene (USFS R6 RNA coordinator-Corvallis) have been the most constant investigators. Another major contributor is John Christy, Oregon Natural Heritage Information Center ecologist, wetland specialist, and moss expert.]



1993



1996

# Restoration of Montane Meadows in Western Oregon: Research and Adaptive Management at Bunchgrass Ridge

Charles B. Halpern, Research Professor, University of Washington  
with Ryan Haugo, Nicole Lang, and Joe Antos from the University of Washington,  
and Fred Swanson from the USFS Pacific Northwest Research Station

Mountain meadows comprise a small portion of the largely forested western Cascade landscape, but serve many important ecological and societal functions. However, decades of fire suppression and changes in climate and/or grazing pressure have led to recent (and often dramatic) expansion of forest into meadow. Faced by gradual loss of these habitats, federal land managers have begun to experiment with prescribed fire as a potential tool for restoration. With funding from the Joint Fire Science Program we have initiated studies at Bunchgrass Ridge to improve our understanding of the ecology and dynamics of montane meadows and to guide strategies for their restoration and maintenance.

Bunchgrass Ridge forms a gently sloping plateau at ~4300 ft elevation in the western Cascade Range, adjacent to the Mt. Washington Wilderness. It was designated a Special Habitat Area in the 1990 Willamette NF Land and Resource Management Plan and was identified as a high-priority restoration project during the 1995 Upper McKenzie Watershed Analysis. Because it supports a large mosaic of meadow and forests of varying age, it provides an ideal setting for studying the process of conifer encroachment and for experimenting with restoration. Several studies are in progress:

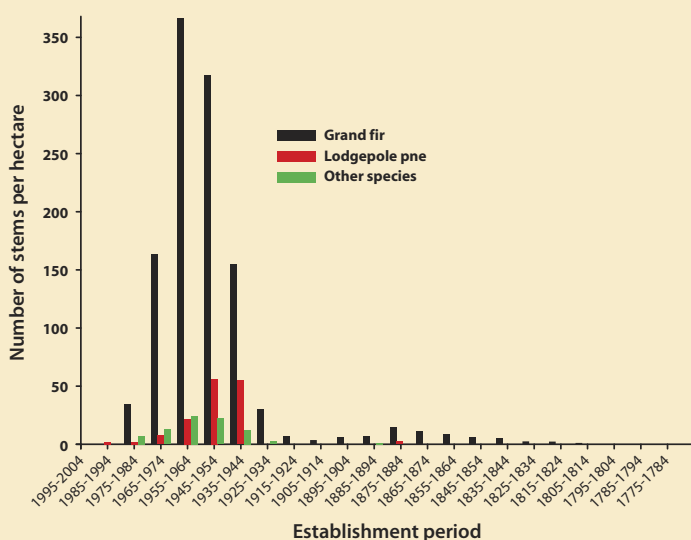
1. Spatial and temporal patterns of conifer encroachment and associated changes in ground-layer vegetation. This research provides the historical and ecological context for subsequent studies that address the potential for restoration. In four 1-hectare (100 x 100 m) plots all trees > 1.4 m tall have been spatially mapped, measured for diameter, and aged (from increment cores or basal sections). Detailed measurements of understory composition were taken in 10 x 10 m subplots within each plot. A composite age structure reveals two periods of forest expansion at Bunchgrass: a broad window of establishment between 1815 and 1905, and more



recent and massive recruitment between 1925 and 1985. During both periods, establishment of lodgepole pine preceded that of grand fir — a pattern that is clearly evident in the spatial clumping of grand fir around live and dead lodgepole pine. Future work will explore in detail the spatial and temporal patterns of encroachment and the associated changes in ground-layer vegetation.

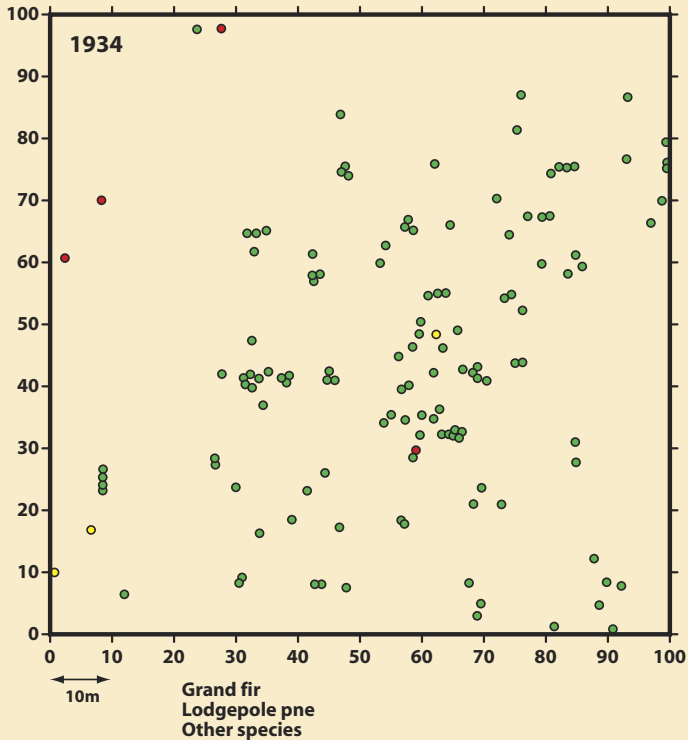
2. Composition and dynamics of the soil seed bank and its potential role in meadow restoration. A second study explores the below-ground dynamics of this system. It poses the question: Does the composition of the soil seed bank change as meadows are replaced by forest, and by implication, can the seed bank serve as a source of propagules for meadow species if trees are removed or sites are burned? Soil samples were extracted from >200 subplots representing a gradient from open meadow to old forest. Samples were spread in germination flats in the greenhouse and seedling emergence has been monitored. A total of 47 taxa have been identified (compared with >130 species in the above-ground flora). Most germinants were early successional species, although the dominant sedge at Bunchgrass, *Carex pensylvanica*, was also well represented in the seed bank. Future analyses will explore relationships between seed bank composition and forest age, structure, and understory composition.

3. Vegetation responses to experimental restoration treatments. We are in the initial stages of a large, replicated experiment that examines vegetation responses to restoration treatments. Three replicates of each of three treatments will be applied to a total of nine 1-ha plots. Treatments include a control, complete overstory removal, and complete overstory removal plus prescribed burning of residual slash. These comparisons will allow us to test whether fire is necessary to achieve restoration goals or whether removal of the overstory is sufficient. Pre-treatment sampling of overstory structure and understory composition was completed in 2004. Tree removal was scheduled for winter 2005, but has been delayed because harvest requires a snowpack to reduce impacts to ground vegetation.

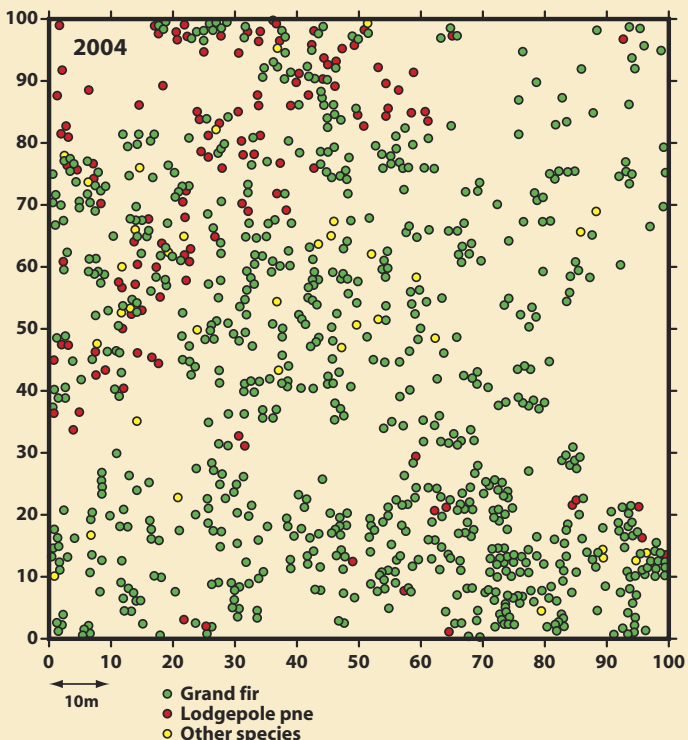


Age structure of trees illustrating two distinct periods of encroachment

We have designed these studies to yield useful short-term products for scientists, managers, and the public, and to provide opportunities for long-term research and education. Participants include faculty and students from the University of Washington, Oregon State University, and University of Victoria, scientists from the USFS-PNW/Andrews LTER, and land managers from the USFS McKenzie River District. Our goal is to develop an ecological basis for restoration of meadows in the western Cascades, using Bunchgrass Ridge as a center for research, adaptive management, and outreach.



*Reconstruction of the density and spatial distribution of conifers in 1934 and 2004.*



## Workshop Success! Using Past Ecological Conditions In Resource Planning: Status of the Science and Application Experience

The Northwest Oregon Ecology Group co-sponsored this workshop on January 25, 2004, at LaSells Stewart Center, Corvallis, Oregon. Over 200 natural resource professionals from throughout the Pacific Northwest pre-registered, and over 400 were in the auditorium at its peak. There was tremendous interest in this topic.

Did you miss this Workshop? If so, there are two ways to access the information that was shared:

1. Cruise to OSU's Streaming Media Archive page:  
<http://oregonstate.edu/media/archives.php>  
At this site, you can watch video coverage of each speaker...or sit back and watch the whole conference! You'll need RealPlayer loaded on your computer before doing this. USFS employees: To load RealPlayer, go to "Start," "Programs," "Real," and "Realplayer." Select to upload the software, and you'll be ready to go. For other agencies, see your IT folks.
2. Cruise to the AMA Website  
<http://www.edo.or.blm.gov/ccama/happening.htm>  
At this site, you can view the powerpoint presentations provided by the speakers. There will also be additional papers provided at this site.



### HRV References

Bruce Marcot, Scientist with the USFS Pacific Northwest Research Laboratory, compiled a terrific bibliography of papers discussing the use of historic/natural range of variability. You can download them from:  
[www.edo.or.blm.gov/ccama/happening.htm](http://www.edo.or.blm.gov/ccama/happening.htm)

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The NW Oregon Ecology Group relies on a variety of professionals throughout the area to support their activities. The following ecologists and biologists also contribute to the program.

Linda Geiser, Lichenologist and Air Quality Specialist,  
Siuslaw National Forest.  
Specialty: Lichens.

Tom O'Neil, Ecologist,  
Northwest Habitat Institute.  
Specialties: Oak restoration, biodiversity data management.

John Christy, Ecologist,  
Oregon Natural Heritage Information Center.  
Specialties: Wetland ecology and mosses.

Martin Brown, Consultant.  
Specialties: Statistics.

Fred Hall, Plant Ecologist.  
Specialty: Special Habitats.

Walt Kastner, Silviculturist,  
Siuslaw National Forest.  
Specialty: Tree diseases.

Dave DeMoss, Silviculturist,  
Eugene BLM.  
Specialty: Forest Ecology.

John Cissel, Research Liason,  
Western Oregon BLM.  
Specialty: Landscape modeling.