Ecology Program
Pacific Northwest Region
USDA Forest Service

Whitebark pine condition survey on the Willamette National Forest.

Accomplishments for Fiscal Year 2008
(October 2007-September 2008)

Annual Report

Ecology Program
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Pacific Northwest Region
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Ecology Program Purpose:

Applied science for better forest and range management.

Ecology Program objectives:

- Provide Science Expertise
- Monitoring Implementation
- Technology Transfer
- Troubleshooting
- Support to NEPA Process
- Managing and Providing Data

About the program:

The ecology program is organized into six areas in the Region: Western Washington, Eastern Washington, Northeast Oregon, Central Oregon, Southwest Oregon, and Northwest Oregon. Each area has a core team of ecologists who work closely with other disciplines, both within the agency and with our partners.

Visit us on the web at www.reo.gov/ecoshare (or Google "ecoshare."). On this site you will find electronic versions of plant association and other publications, maps, datasets, photos, and the contact information for the area ecology teams. The site also includes the Regional and Northwest Oregon area newsletters.

Western Washington Area Ecology Program (Area 1)
Mt. Baker-Snoqualmie, Olympic, and Gifford Pinchot National Forests

Team: Jan Henderson, Robin Lesher, Chris Ringo, and Jessica Hudec

Projects (numbered 1 through 8 below)

1) Potential Natural Vegetation (PNV) Model and Mapping Project

We are leading a coordinated PNV mapping project for the region that provides wall-to-wall coverage for Washington and Oregon. We provide products, data, and technical expertise from this mapping effort (including maps, spatial data on vegetation and environmental gradients, methodology, interpretation, training, and technical support) to various government and land management agencies, resource professionals and scientists throughout the Pacific Northwest.

PNV Overview Manuscript: Completed draft of PNV technical paper presenting overview of PNV model, conceptual basis, model development, environmental variables, and vegetation zones of the Olympic Peninsula. Manuscript has gone through 3 rounds of internal review, and was submitted for peer review to 5 external reviewers. Target journal is Ecological Monographs.

PNV Model Development: Vegetation Zones, Plant Association Groups, Environmental Gradient Models

WASHINGTON:

Refined vegetation zone model for Olympic Peninsula;

Validated Olympic vegetation zone model using independent data set.

OREGON:

Coordinated with Oregon ecologists to assemble environmental and physical data for building Oregon vegzone model, including geology, soils, regolith, (e.g. Pleistocene lakes, ashfall, pyroclastic flows and cinder cones, etc.), weather station data and SNOTEL (SNOwpack TELemetry) sites;

Calibrated and refined vegetation zone model for eastern Oregon;

Coordinated with Oregon ecologists in development of Plant Association Group classification for southwest Oregon;

Assembling regional and other agency datasets of ecoplots to use for building and calibrating vegzone model.

PNV Model Application:

Developed architecture in model to address specific needs for modeling vegetation in Oregon, specifically building a function for stratifying the landscape by geological regions (georegions), including Mt. Mazama ash deposits, pyroclastic flows and serpentine bedrock.

Revised Oregon Ecoregion stratification and boundaries;

Continued development and refinement of PNV Model PC Application, code update and development, including online help manual and documentation

Developed tools for analysis and display of data layers and model outputs

Upgraded Species Habitat Model code

Improved the Cold Air Drainage Model

Developed new Topographic Roughness Model

Installed PNV Model application for various end users

Provided PNV application support for all model users

2) Species Habitat Modeling

Completed report on the distribution and ecology of salal (Gaultheria shallon) and map of potential habitat on the Olympic NF, and gave oral presentation to Olympic NF resource managers and staff. Potential habitat defined by quality of habitat and abundance of salal, and mapped at a 90-meter pixel resolution. Information on the spatial distribution, abundance and ecology of salal can assist resource managers in addressing management questions for this special forest product, including harvest areas, sustainable levels of harvest, environmental and site conditions, and stand structure.

3) Interagency Mapping and Assessment Project (IMAP) Support

Provided updated vegetation zone and plant association group maps

Ringo completed VDDT training

4) Ecology Database and GIS

Application development, data entry and maintenance of Western WA Area Ecology database

Led data recovery efforts for Olympic National Forest corrupted fire history layer

5) Cook Creek Cedar Theft (Olympic National Forest)

Continued participation with USFS law enforcement personnel and U.S. Attorney's office on the Cook Creek Cedar theft case on the Olympic National Forest and pending restitution hearing.

6) Forest Interdisciplinary (ID) Teams

Ecologists served as members of ID teams for the following projects on the Mt. Baker-Snoqualmie NF, including attending meetings and preparing reports.

Finney Adaptive Management Area (AMA) Plan: Prepared report on the ecology and environment of the Finney AMA, including succession and development of old-growth forests, fire history, climate and climate change, and proposed topics for experimentation. Conducted analysis to develop restoration model to establish benchmarks of stand attributes for various stand ages and stages of development to meet AMA objective of old-growth restoration (in progress). Prepared maps of potential vegetation, fire history, stand year of origin, and marbled murrelet locations.

Miller Foss Watershed Analysis: Prepared report on the ecology and vegetation of the Miller and Foss watersheds for the watershed analysis document. Report included description of the climate, topography, geology, glacial history, vegetation, fire history and disturbance, sensitive species and noxious weeds. Identified issues and concerns for vegetation management in the watershed.

Forest Monitoring Report: Prepared report on monitoring activities of the Area Ecology Program for the Forest Annual Monitoring Report.

7) Ecology Benchmark Plots and Thinning Treatment Monitoring

Installed permanent plots and remeasurement plots to monitor thinned stands on the Mt. Baker-Snoqualmie National Forest in preparation for technical paper. Continued cooperation with the PNW Olympia lab in the Silver Fir Spacing Trial, a long-term study to document stand response to different stocking levels in the Silver Fir Zone. The study was initiated in 1987; field work this year represented the fourth measurement of plots at 4 installations.

Plot location and totals for 2008 field season on the Mt. Baker-Snoqualmie National Forest.

Project Area	Thinned Plots	Control Plots	Other	Plot Total
Remeasurement Plots				
Hey Thin	5	2		7
South Fork Thin	1	1		2
318 Sale	1			1
Sky Forks Thin - Barclay	1			1
Junction Thin	1			1
Beckler Thin	1			1
New Installation				
Forgotten Thin		1		1
Silver Fir Spacing Trials (in Finney AMA)				
Iron Mountain	10	2		12
Cumberland Creek	5	1		6
Crevice Creek	5	1		6
Other Ecology Benchmark Plots				
Remeasurement plots			6	6
Plot Totals	30	8	6	44

8) Vegetation Management

Provided report on site potential tree heights by plant association group on the Mt. Baker-Snoqualmie NF to be used by resource specialists in meeting standards and guidelines of the Aquatic Conservation Strategy.

Provided report on distribution, abundance and ecology of graminoid species to assist botanists in developing native seed collection guidelines and restoration activities for selected watersheds on the Mt. Baker-Snoqualmie NF.

Prepared report and map on distribution, abundance and ecology of Cascara (*Rhamnus purshiana*) on the Olympic National Forest in response to issues regarding special use permits for collection of plant material.

Provided information to Special Forest Products (SPF) coordinator on Mt. Baker-Snoqualmie NF on the ecology and distribution of SFP species, discussed tools and assistance that ecology program can provide to assist in sustainable management of target species.

Cooperation, Technology Transfer and Publications

Ecology staff had contacts with resource professionals, scientists and academics from a variety of agencies (USFS, BLM, NPS, NRCS, DNR, PNW, PSW, Oregon Natural Heritage Program, Washington Natural Heritage Program, NOAA/NFMS) and universities in the PNW (UW, OSU, UI). We responded to requests for technical expertise, knowledge and information regarding PNV mapping, as well as a diverse set of issues, questions and subject matter.

Regional vegetation zone and plant association group maps to Jerry Franklin and Norm Johnson for ecological stratification of a thinning study in the PNW.

Vegetation zone and plant association group maps to the National Park Service and Oregon Natural Heritage Program to use in stratification for field sampling, classification and mapping project for the three National Parks in Washington State.

Provided data for ecoplots in whitebark pine habitat on Olympic and Mt. Baker-Snoqualmie NFs to PNW lab for analysis and development of study plan
Species habitat model for *Hypogymnia duplicata* to SE Group consulting firm for the Snoqualmie Pass Ski Area Master Plan EIS.

Transferred precipitation at Sea Level and Fog Effect maps to Martin Hutten for bryophyte distribution analysis on the Olympic Peninsula.

Canopy cover and site tree height data by vegetation series for the Olympic and Mt. Baker-Snoqualmie NFs, to regional riparian group modeling potential riparian shade.

Transferred ecology plot data and field sampling protocols for mountain goat habitat mapping study on the Mt. Baker-Snoqualmie NF to wildlife graduate student at University of Idaho.

Distribution and ecology of *Tholurna dissimilis* on the Mt. Baker-Snoqualmie NF for Rare Care project with the Washington Natural Heritage Program.

Consultation with Washington State Habitat Director for NOAA/NMFS regarding Riparian standards in Washington.

Consultation, data and map products to Olympic National Park for current vegetation mapping project.

Seattle Art Museum – Olympic Sculpture Park Vivarium and Nurse Log Exhibit: ongoing consultation with park staff on maintenance of nurse log exhibit, including site visits. Also led volunteers on field trip to origin site of nurse log to collect material for maintaining nurse log exhibit, and presented information on the ecology of the site and nurse log functions.

Fire History data for Olympic National Forest to graduate student at the University of Washington.

Provided 2 weeks field training in ecology plot methods to Gifford Pinchot NF Fuels Specialist (Hudec).

Support to Pacific Southwest lab on Shortwave Solar Radiation Model.

Provided vegetation zone data layers to R6 Interagency Monitoring Program.

Provided vegetation zone and climate data to Natural Resources Conservation Service for mapping efforts in North Cascades National Park.

Provided PNV environmental data for study of climate-growth relationships of Ponderosa pine and Douglas-fir on the Colville NF.

Other

Lesher serves on Northwest Scientific Association Board of Trustees, and the planning committee for 2009 Annual Meeting at University of Washington "The Pacific Northwest in a Changing Environment".

Maintained five remote data logger stations to measure air and soil temperature and soil moisture on Mt. Baker-Snoqualmie NF; including deployment of newer technology dataloggers to replace end-of-life loggers, deployment of data loggers in Hey Thin project area plots.

Program Goals FY09 and beyond

Submit PNV overview manuscript for publication in Ecological Monographs or Journal of Vegetation Science

Complete PNV Vegetation Zone Model and Map for Washington State, conduct accuracy assessment of Washington State vegetation zone map using independent data set
Complete Vegetation Zone Map for Oregon

Submit manuscript PNV Vegetation Zone Model and Map for Washington State for publication as Northwest Science Special Issue

Complete Plant Association Group map for western Washington

Monitor and install ecology benchmark plots and thinning monitoring plots

Publish papers on thinning monitoring; species habitat models; benchmarks for old-growth forest restoration; stand growth, development and succession for western Washington forests

Western WA Ecology database - develop Access database application--corporate and public version

Consultation on Area Forests

Develop species habitat models for species of interest

Mt. Baker-Snoqualmie National Forest Office Guide

Fire History maps and stand year of origin analysis for Western Washington

Non-forest classification for Mt. Baker-Snoqualmie and Olympic National Forests

Eastern Washington Area Ecology Program (Area 2)
Colville and Okanogan-Wenatchee National Forests

Team: Rod Clausnitzer, Kelly Baraibar, Gunnar Carnwath, Bill Gaines, Richy Harrod, Pete Ohlson

Projects: (1-12 numbered below)

1) Range Monitoring Summary (Okanogan-Wenatchee NFs)

   Seven Condition and Trend Range Sampling Clusters were monitored in 2008 (five plots on the Methow Valley Ranger District and three plots on the Tonasket Ranger District).

   Seventeen Condition and Trend Range Sampling Clusters with relocation efforts, not found in 2008 (eight plots on the Methow Valley Ranger District and nine plots on the Tonasket Ranger District).

2) FY08 Pacfish-Infish Biological Opinion (PIBO) Monitoring (Colville NF)

Six Designated Monitoring Area Plots were monitored

PIBO Group/Watershed	Stream Name	DMA Plot #	Allotment
Group 12/watershed 3	S. Fork Mill Creek	2007-1	S. Fork Mill Creek
Group 12/watershed 3	Hanson Creek	2007-2	S. Fork Mill Creek
Group 12/watershed 8	Twelvemile Creek	2007-3	Twelvemile Creek
Group 12/watershed 11	N. Fork Strauss Creek	2007-5	Alladin
Group 12/watershed 17	Md. Fork Calispell Creek	2007-4	Calispell Creek
Group 13/watershed 1	Big Muddy Creek	2007-6	Tiger Hill

3) Natural Resource Information System (NRIS) and other database management:

FY2007 & FY2008 range data input completed (NRIS and Access databases).

FY2008 PIBO monitoring data input and sent to national database manager.

Condition and trend analyses completed on all FY07 and FY08 clusters; summaries sent to ranger district personnel.

4) Plan revision:

Participated in potential wilderness area and roadless area analyses.

Developed invasive species analyses and priority watersheds for invasive plant management.

5) Ecoplot Relocation/Resampling

Revisited seven ecoplots in Tripod Fire for data collection on post-fire recovery in subalpine fir veg zone. While this work will paint a picture of post-fire recovery in itself, it will be an integral part of an effort to assess Burned Area Emergency Rehabilitation (BAER) treatments (e.g., aerial mulching) and effects on vegetation recovery and successional development. Recon aerial mulch treatment areas to identify study sites of aerial straw mulch impacts on post-fire vegetation development. Investigator: Rod Clausnitzer

6) Whitebark Pine

Area Ecology supported cone crop assessment in northern districts of the Okanogan-Wenatchee NF. In particular, the work was to identify areas of potential cone collection in FY09. These efforts support the recently released R6 Whitebark Pine Restoration Strategy. In addition, support was given to print the strategy for distribution to USFS, BLM, and state agencies in eastern Washington.

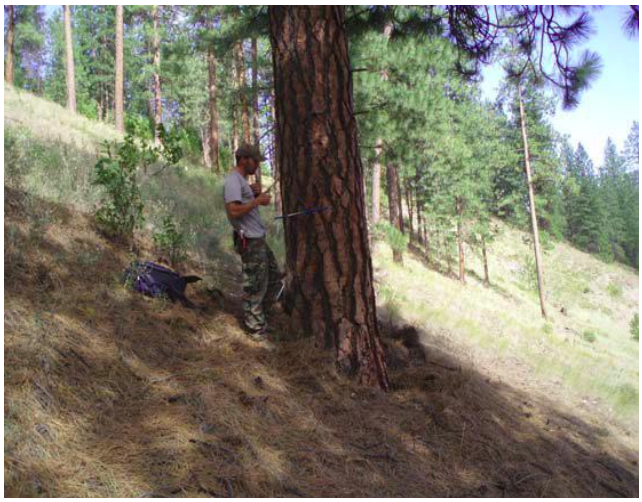
7) Effects of Competition and Environmental Factors on Climate-Growth Relationships: Implications for Forest Restoration and Management on the Colville National Forest; Investigator: Gunnar Carnwath

Study Objectives: 1) Determine the primary climatic factors that affect radial growth of dominant and co-dominant trees across a temperature and moisture gradient. 2) Assess the influence and potential interactions of inter-tree competition and local environment on climatic sensitivity and climate-growth relationships. 3) Evaluate the potential for stand-level management activities to contribute to the "facilitated adaptation and mitigation goals" of the Forest Service's *Strategic Framework for Responding to Climate Change*.

Secured additional funding from the McIntire‐Stennis Cooperative Forestry Research Program.

Collected approximately 800 tree cores from eight stands capturing the full elevational distribution of *Pinus ponderosa* and *Psuedotsuga menziesii* on the Colville National Forest.

Identified 14 of 21 total sample sites and worked through various equipment and logistical issues that will increase productivity and efficiency in 2008. Mounted, sanded, counted, and measured all cores and performed preliminary data analysis.



8) Dry Forest Treatments and Birds

This was the final year of funding for this series of monitoring studies. Results from these studies were presented at the Dry Forest II Workshop. Final publications are posted on the "Wildlife Ecology" link on the Forest Area Ecology website. This series of publications should provide "everything you needed to know but were afraid to ask" regarding the effects of dry forest treatments on landbirds. These monitoring studies included a wide range of partnerships including: the Joint Fire Sciences Program, Wenatchee Forestry Sciences Lab, University of Washington, and Central Washington University. Results are now being applied to both evaluate the effects of and to design dry forest restoration projects. Accomplishments include four publications (listed in the "Cooperation, technology transfer and publications" section). Investigator: Bill Gaines

9) Post-fire Harvest and Cavity Excavators

Much controversy has surfaced regarding the effects of post-fire salvage harvest on fuels, soils, and wildlife. These funds were used to complete the final year of a three year effort to resample avian species within the 1994 fire areas. These areas were sampled immediately post-fire and salvage logging and a paper published on the short-term effects on cavity nesting birds (Haggard and Gaines 2001). By resampling this area we will gain an understanding of the long-term affects of post-fire salvage harvesting on bird communities. These funds were used to support a graduate student who is doing this monitoring study as a part of a Master's degree. Other partners in this effort include Central Washington University and the Wenatchee Forestry Sciences lab. Investigator: Bill Gaines

10) Effects of Thinning on the Development of Old Forest Habitat Attributes

There has been an emphasis in the past few years to use commercial and pre-commercial thinning to accelerate the development of old forest habitat attributes,

such as large trees, within previously clear-cut stands in moist and wet forest types. However, the efficacy of these treatments remains largely speculative. These treatments are being applied within clear-cut lands that were acquired through the I-90 land exchange on the Cle Elum Ranger District. We used these funds to establish a habitat sampling protocol. The protocol will be implemented during the FY09 field season to begin a long-term monitoring effort. Future efforts may be extended to the Wenatchee River Ranger District where similar treatments are being planned. Other partners included in this effort are the Wenatchee Forestry Sciences lab, Conservation Northwest, and Central Washington University. Investigator: Bill Gaines

11) Area 2 Fire Ecology

Completed re-measurement of Deer Point Fire Area snag plots (analysis and progress report to be completed winter 08/09.

Collected post-treatment understory vegetation and shrub data on Hungry/Hunter mastication project plots.

Collected fire history information and prepared maps of all eastside Forests in Region 6 for Joint Fire Science Re-burn project.

Co-led public field trip in cooperation with the Washington Native Plant Society and Methow Conservancy to portions of the Tripod Fire Area to present information and discuss fire ecology (including the historic role of fire in subalpine forest environments and post-wildfire vegetation recovery).

12) Environmental education

Dry site forest monitoring of Tripod burn in conjunction with junior high school program for science students. In June 2008, the students monitored ecology plots that were installed in FY07. Students will analyze data and display it with associated photos.

<u>Cooperation, Technology Transfer and Publications</u>

Ecology staff had contacts with resource professionals, scientists and academics from a variety of agencies and universities in the PNW. We responded to requests for technical expertise, as well as a diverse set of issues, questions and subject matter.

Everett, Richard, David Baumgartner, Peter Ohlson, and Richard Schellhaas. 2008. Structural classes and age structure in 1860 and 1940 reconstructed fir-pine stands of eastern Washington. Western North American Naturalist, 68(3), 2008, pp.278-290.

Everett, R., D. Baumgartner, P. Ohlson, and R. Schellhaas. 2008. Defining and quantifying canopy strata. Northwest Science, Vol. 82, No. 1.

Gaines, W.L., A.L. Lyons, J.F. Lehmkuhl, M. Haggard, J.S. Begley, and M. Farrell. 2008. Chapter 8. Avian community composition, nesting ecology, and cavity-nester foraging ecology. Pages 109-141 in Agee, J.K., and J.F. Lehmkuhl, compilers. Dry Forests of the Northeastern Cascades Fire and Fire Surrogate Project Site, Mission Creek, Okanogan-Wenatchee National Forest. USDA Forest Service, Pacific Northwest Research Station. PNW-RP-577.

Gaines, W.L., M. Haggard, J. Begley, J.F. Lehmkuhl, and A.L. Lyons. 2009. Short term effects of fire and fire surrogate treatments on avian community composition, density, and nest survival in the eastern Cascades, Washington. Forest Science.

Gaines, W.L., M. Haggard, J.F. Lehmkuhl, A.L. Lyons, and R.J. Harrod. Short term response of land birds to ponderosa pine restoration. 2007. Restoration Ecology:15(4):666-674.

Lyons, A.L., W.L. Gaines, J.F. Lehmkuhl, and R.J. Harrod. 2008. Short-term effects of fire and fire surrogate treatments on foraging tree selection by cavity-nesting birds in dry forests of central Washington. Forest Ecology and Management 255: 3203-3211.

Northeastern Oregon Area Ecology Program (Area 3)
Wallowa-Witman NF, Malheur NF and Umatilla NF

Team: David Swanson, Jenifer Ferriel, Dave Powell

Projects: (1-9 numbered below)

1) Ecology Web pages

   Major overhaul of fire effects monitoring summaries to include 2007 data. Forty-one web summaries (each with sequential photography, narratives, and summary data tables) from 23 Plant Association Groups are now available, with up to 21 years of post-fire monitoring for some types.

   Guidelines for statistical analysis of rangeland monitoring data (Parker and Cover/frequency) developed and posted to web. These pages consist of screen shots of Excel tables and associated instructions.

   Legacy instructions for Parker 3-step method scanned to pdf and posted.

   Scanning to pdf and posting of other legacy documents (sampling guidelines, white papers, reports from site visits, etc) from the Ecology program files completed.

2) Ecology Database

Large data set from 1978 entered, edited, and appended into Ecology database. Locations digitized from map. Includes 25 plots of T&E plant species (by Kagan, Zika, others) and 188 ocular macroplots in the Hell's Canyon National Recreation Area (by Dave Peter). D. Peter photos were scanned and organized with help from DP. Rescue and entry of Charlie Johnson-era data now more-or-less complete

Moss and lichen collections by OSU (655 specimens by Daphne Stone, David Kofranek, Eric McEwen and Ron Hamill, 2006-07) now in our herbarium. Database table created from herbarium labels and added to Ecology database.

Database tables rescued/created containing lists of plots used to develop published classifications

3) Implementation of "Interpreting Indicators of Rangeland Health"

Continuing work on assignment of Natural Resources Conservation Service (NRCS) Ecological Sites to major Terrestrial Ecological Unit Inventory (TEUI) map unit components (TEUI data now available for much of the Tri-Forest area). Summary table of available eco-sites compiled from NRCS sources and distributed at 2008 Blue Mountains Range Managers training (DS).

Drafts Rangeland Health reference conditions for 4 forested ecosystems written and posted on the web (Dry Forest Shallow soil, Dry Forest Shrubby, Dry Forest Deep soil, Cool Moist ABGR)(DS)

4) Ranger District Assistance

Habitat information for new invertebrate spp and non-vascular plants added to 2008 sensitive and strategic species lists, Malheur NF (2 days).

Range monitoring training/sampling, Malheur (2 days).

Field visit of older aspen exclosures to see differences in survival and growth for different exclosure types, Malhuer NF (2 days).

Delineate final Boundary for Dixie Mountain Research Natural Area, Malheur NF (1 day).

Read 3-4 C&Ts in Eden Allotment, Walla Walla RD, Umatilla NF (2 days).

Help classifying wet meadows according to Crowe and Clausnitzer, assess health and restoration potential, and help identify occurrence and habitat for First Foods. Walla Walla RD, Umatilla NF (1 day).

Field visit to Texas Bar Riparian restoration sites, North Fork John Day, Umatilla (1 day).

Assessment/monitoring of Otter and Sugarbowl Salvage sales, North Fork John Day, Umatilla (5 days).

Field review of the Tollgate WUI planning project. Walla Walla, Umatilla (1 day).

Field review of Pedro area post harvest and burning. Walla Walla, Umatilla 1 day).

Develop and apply monitoring in aspen treatments, Billy Meadows area, Wallowa, Wallowa-Whitman (1 day).

Review recent and future riparian plantings for match with site potential; Swamp and Chesnimnus creeks, Wallowa, Wallowa-Whitman (1 day).

Noxious weed treatment monitoring and MacFarlane's 4-O-clock monitoring review, Hell's Canyon National Recreation Area, Wallowa-Whitman (1 day).

Vance Knoll Monitoring 5th year sampling, 3 days, Wallowa, Wallowa-Whitman (3 days).

Evaluate tarweed sites and identify restoration opportunities in Walker Ridge vicinity. La Grande, Wallowa-Whitman NF and Walla Walla, Umatilla NF (1 day).

Proper Functioning Condition Interdisciplinary (ID) team participation, Whitman Unit, Wallowa-Whitman NF (3 days).

Field Review of Burnt River Restoration sites and Allotment with Whitman ID Team, Wallowa-Whitman (1 day).

5) Blue Mountains Forest Plan Revision Support

Further Review of draft Forest Plan Revision, focusing on Research Natural Areas and Riparian sections.

Blue Mountain-wide analysis of rangeland conditions for plan revision.

6) Fire effects studies

Sampled permanent fire-effects monitoring plots for fires with dates ranging from 1986 to 2006. Malheur NF: 30 plots in 6 fires; Umatilla NF: 16 plots in 2 fires; Wallowa-Whitman NF: 30 plots in 5 fires.

Cedar Grove Botanical Area fire effects study. Sampled 12 transects in the Cedar Grove Botanical Area to monitor effects of a 2006 fire on a unique disjunct stand of

the maritime species Alaska Yellow Cedar (*Cupressus nootkatensis*) in a semiarid environment.

Read plots for newly established study of post-fire recovery of biotic soil crusts. Plots were co-located with established ocular macroplots inside and outside of exclosures in two 2007 fires on the Umatilla and Malheur NFs.

Updated our fire effects USFS Intranet web pages to include data available to date.

7) Interagency Special Status / Sensitive Species Program (ISSSSP) projects

Updated Fungi Management Effects Bibliography. This is an online resource for information on mycorrhizal special status and sensitive species fungi (a subgroup of "Survey and Manage" species). The two parts to this project included a fungi habitat table and an annotated bibliography. Compiled all fungi information from CVS plot data for the table. The annotated bibliography entailed compiling the best available science for management effects and developing an annotated bibliography. The habitat table will be used as an aid for determining potential habitat in proposed project areas. The annotated bibliography will be used for effects analysis in NEPA documents.

Survey for *Rubus bartonianus*, an ISSSSP endemic shrub of the Snake River Canyon. This is a 2-year cooperative project between the Vale BLM and Wallowa-Whitman NF to gather information on the extent of the population of *Rubus bartonianus* including information on threats such as competition from noxious weeds and wildfire.

8) Research Natural Areas (RNAs)

Wenaha Breaks RNA Establishment Record and NEPA finalized.

RNA Establishment Record Challenge Cost-Share Agreement with Oregon Natural Heritage Information Center (ORNHIC) will be complete in December.

Initiated establishment process for CG Johnson Meadow RNA.

9) Exclosures

Funded maintenance work by Ranger District staff on long-term ecology monitoring exclosures. Repairs to 3 exclosures burned in the Egley Complex fire (Malheur NF) were completed. Allen Springs, Lord Flat, and Mormon Flat exclosures on the north end of the Wallowa-Whitman NF were repaired.

Cooperation, Technology Transfer and Publications

Reprinting of Stuart Markow willow guide. Located original graphics, expanded the guide to cover species of all three National Forests, reformatted for printing; submitted to R6 Public and Legislative Affairs. In press

"Aspen ecology and management in the Blue Mountains". Draft completed. In Peer Review.

"Introduction to fire effects on vegetation" RX-310 Interagency fire training, 1-hour session for 200 students, Redmond.

"Growing and Managing Aspen on Your Property", OSU Extension Service Tree School East

Annual Tri-Forest range training session in Pendleton, Mar '08. Locating upland effectiveness monitoring plots, Parker 3-step and Daubenmire cover/frequency sampling methods. Parker 3-step scoring, statistical analysis of cover-frequency, line-point intercept, and Parker data; Rangeland Health reference conditions; monitoring woody species.

Tri-Forest Plant Association guide training, Wallowa Whitman NF, La Grande District

Plant Association guide training for new employees, Malheur NF

Training in the use of the Ecology Web Site Information, Range Focus, Umatilla NF

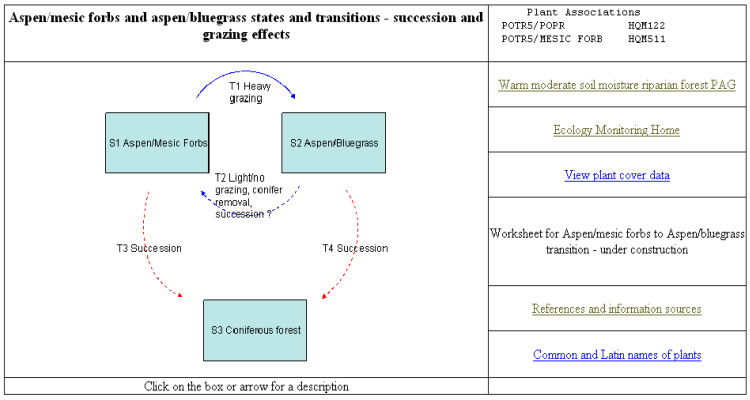
Other

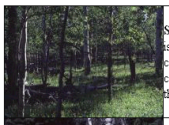
We are sponsoring a Student Career Experience Program (SCEP) student (Ken Stella) who will be converted to an ecologist on the Malheur National Forest in August 2009. Ken will be part of the Northeastern Oregon Ecology Program and responsible for maintaining long term monitoring plots in his area and other ecology duties as assigned. Ken spent last June with the NE Oregon ecologists, including two weeks with regional ecologist emeritus Fred Hall, learning about the NE Oregon ecology program.

Dave Swanson moved on to a position with the Park Service in Fairbanks, Alaska during the summer of 2008. We are grateful for his many contributions. At this writing, selection of a new area ecologist is imminent.

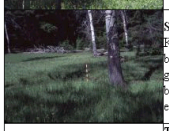
Ecologist Dave Swanson (third from right) discussing the ecology of *Madia glomerata* (tarweed) at a field review of potential scabland restoration sites.

Early summer Camas, and biscuit root at Vance Knoll RNA. The Blue Mountain Area Ecology Program has been the lead in proposing and establishing research natural areas on the Malheur, Umatilla and Wallowa Whitman National Forests since 1983. Three proposed RNAs have become established in 2007 to 2008. Four additional proposed RNAs will have establishment records completed by the end of FY09.





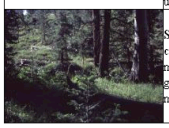
State 1: Aspen/Mesic Forb plant community type. These communities consist of aspen forest with few shrubs; the understory is a rich assortment of forbs, many of which have showy flowers (Camas, Columbine, and Penstemon, for example). A variety of conifers (especially ponderosa pine, douglas fir, and grand fir) may be found growing in the understory. Small aspen trees are common in sunny gaps between overstory trees. This community type is common in mid-elevation (4000-6500 ft.) meadows of the Malheur and southern Wallowa-Whitman National Forests.



State 2: Aspen/Bluegrass plant community type. These communities consist of aspen forest with an understory dominated by Kentucky bluegrass. A variety of conifers (especially ponderosa pine, douglas fir, and grand fir) may be found in the understory, but aspen regeneration is typically suppressed by grazing. The shrub cover is sparse and the bluegrass is accompanied by low-growing forbs such as strawberry, dandelion, and long-stalked clover, other grasses (especially mountain brome), and some tall but less grazing-affected forbs such as yarrow. More severely disturbed spots may have annual or biennial herbs such as blue-eyed mary or wooly mullein.

Transition 1: Aspen/Mesic Forb to Aspen/Bluegrass. This transition is believed to result mainly from prolonged heavy grazing by livestock or livestock and elk. Grazing selects for plants that have their growing points near the ground so that they are not killed by removal of their tops, especially Kentucky bluegrass. Meanwhile, grazing tends to reduce or eliminate Geyer's onion, common camas, sweet-cicely, and starry false solomon's seal. Some forbs, such as columbine, buttercups, and groundsel, do not decrease so markedly, perhaps due to poor palatability to grazers. Grazing also prevents regeneration of aspen - young aspen are usually heavily grazed, hedged near ground level.

Transition 2: Aspen/Bluegrass to Aspen/Mesic Forb. This transition will be difficult to accomplish once a dense bluegrass sod has been established. Reduction or elimination of grazing by cattle and elk and removal of competing conifers usually results in quick recovery of aspen regeneration, unless a dense tree canopy is present. Reduction of grazing may also help the recovery of some of the forbs typical of the aspen/mesic forb plant community type. However, our informal observations have shown that excluding livestock from aspen/bluegrass communities results in a luxuriant dense stand of bluegrass that will greatly hinder recolonization of the site by native plants such as camas. Monitoring of exclosures in the future should yield some information on restoration of the understory plants. Complete elimination of Kentucky bluegrass (an exotic species) by succession alone is unlikely.



State 3: Coniferous forest; Transitions 3 and 4: Aspen/Bluegrass or Aspen/Mesic Forb plant community types to coniferous forest. Succession appears to be toward grand fir forest in most cases, but ponderosa pine may be abundant at mid-seral stages. Succession to coniferous forest will be more rapid if conifer seed sources are close and grazing suppresses growth of young aspens. Succession to coniferous forest could be stopped or slowed by fire or conifer harvest. In some meadows natural fluctuations in the water table may cause conifer mortality, creating gaps that aspen can exploit.

References and sources of more information:

Crowe E.A. and Clausnitzer R.R. 1997. Mid-montane wetland plant associations of the Malheur, Umatilla and Wallowa-Whitman National Forests. USDA Forest Service, Pacific Northwest Region, R6-NR-ECOL-TP-22-97, 299 pp.
See pp. 82-84 for more detailed descriptions of these aspen community types.

Mueggler, W.F. 1988. Aspen community types of the intermountain region. USDA Forest Service Intermountain Research Stations General Technical Report INT-250, 135 pp.
Mueggler's Populus tremuloides/Thalictrum fendleri (p. 33) and Populus tremuloides/Poa pretensis (p. 47) community types are very similar to our Aspen/Mesic Forb and Aspen/Bluegrass communities, respectively. Much of the ecological and management information he presents is applicable to northeastern Oregon.

Plant Names

Latin Name	Common Name
Abies grandis	Grand fir
Allium geyeri	Geyer's onion
Aquilegia formosa	Columbine
Camassia quamash	Camas
Collinsia parviflora	Blue-eyed Mary
Fragaria virginiana	Strawberry
Penstemon sp.	Penstemon
Pinus ponderosa	Ponderosa pine
Poa pretensis	Kentucky bluegrass
Populus tremuloides	Aspen
Pseudotsuga menzesii	Douglas-fir
Ranunculus sp.	Buttercup
Senecio sp.	Groundsel
Smilacina stellaris	Starry false Solomon's seal
Taraxacum officinale	Dandelion
Osmorhiza sp.	Sweet cicely
Trifolium longipes	Long-stemmed clover
Verbascum thapsis	Wooly mullein

This is an example of a state and transition web page from the Northeastern Oregon Ecology program's web site. Each page includes sequential photography from representative monitoring locations, narrative summaries of our monitoring data, and links to complete plant species lists and canopy cover data. Currently, forty-one web summaries (each with sequential photography, narratives, and summary data tables) from 23 Plant Association Groups are now available on the web site.

Central Oregon Area Ecology Program (Area 4)
Deschutes NF, Ochoco NF, Fremont-Winema NF

Team: Gregg Riegel, David Baker, Beth Johnson, Sara Prueitt Lovtang, Mike Simpson

Projects (1-9 numbered below)

1) Administrative Studies Fire Ecology

Our program currently consists of several ongoing long-term studies. These studies include examining the effects on the understory of a variety of fuels treatments, of various fire return intervals, and of post-wildfire salvage logging.

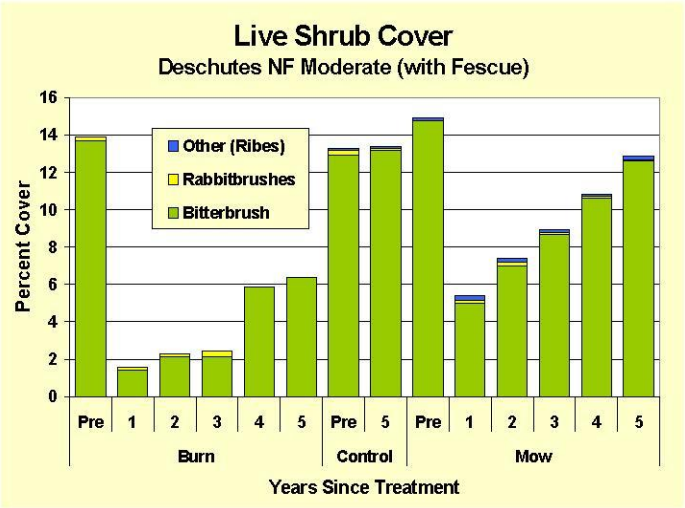
Fire Ecology Plots Measured in 2008

	Deschutes	Modoc	Winema	CRNG	Total
Alternative Fuels Treatments Study Plots (plot size =1.0 ha)					
Fall Burn	3				3
Spring Burn	9				9
Mow	9	4			13
Thin (installed only)		4			4
Thin & Burn		4	1		5
Fire Return Interval Study Metolius Research Natural Area (RNA) (Fuels transects)					
Pre-Burn	1				1
Post-Burn	1				1
Post-Wildfire Salvage Logging (plot size = 1.0 ha)					
Logged	3				3
Not Logged	3				3
Old Growth Ponderosa Pine Long Term Monitoring Pringle Falls RNA (plot size = 1.0 ha)					
Burned	6				3
Gray Butte Juniper Fuel Treatment (plot size = 60m x 60m)					
Burned				8	8
Not Burned				4	4
Totals	**35**	**12**	**1**	**12**	**60**

Alternative Fuels Treatment Study:

This study began in 2000, to examine the effects of alternative fuel treatments mowing and thinning, as they compare to prescribed burning, in second growth ponderosa pine/ antelope bitterbrush (*Purshia tridentata*) plant associations on the Deschutes, Fremont-Winema, and Modoc National Forests. Sixty, 1.0 ha, permanent plots have been established. Treatments began in 2001, include prescribed spring and fall burning, mowing, thinning, thinning and burning, and control

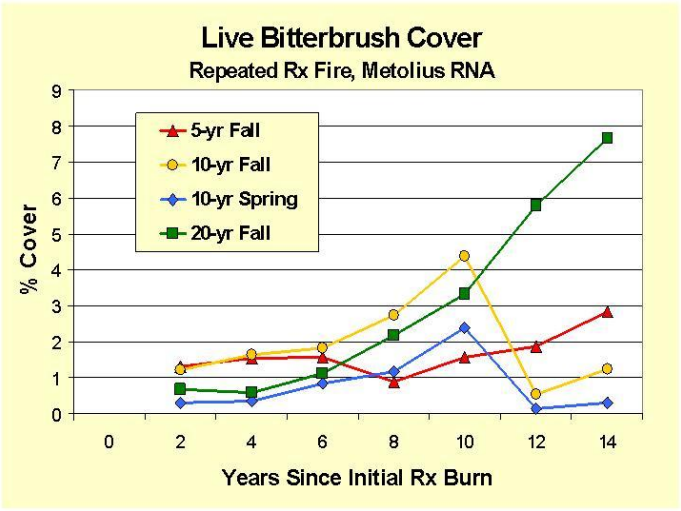
A thin and no burn treatment with four replicate plots was installed on the Modoc in 2008 and are scheduled to be treated 2009. All plots were measured prior to treatment. Post-treatment measurements are made annually though year 5 and then will be on a three year interval through year 20. Matt Busse, Research Soil Microbial Ecologist, PSW, Davis is cooperator.



Above: Beth Johnson examining an unburned site that will serve as a seed source for herbaceous and shrub reestablishment as well as immediate wildlife refugia. This site has remaining unburned for four repeated burn intervals over 20 years in the Metolius Research Natural. After five years the mowed treatment sites have regrown to near pretreatment cover as compared to prescribed fire sites which are still less than half pretreatment cover. If the objective is having longer time intervals between retreatment prescribed fire is the preferred tool. If area where the objective is to have limited bitterbrush post treatment mortality and faster regrowth rates mowing is the preferred tool. Since we are uncertain how long vegetative resprouts will live, long term monitoring will continue to yield useful information to help forecast retreatment intervals.

Reintroducing Fire in Eastside Ponderosa Pine Forests:

We are examining changes in understory composition, structure, and soil processes that are repeatedly burned in the at a 5, 10, and 20 year return intervals within old growth ponderosa pine in Metolius RNA (originated in 1992). For the 10-year interval plots we are also examining the effect of seasonality of treatment and have 3 plots that are burned in the fall and 3 in the spring. The primary measurements are done bi-annually, and this year only the measurements for fuel loads on 2 units were needed. Matt Busse, Research Soil Microbial Ecologist, PSW, Davis is cooperator.



(left to right) After four prescribed fires at five year intervals there is very little fuel to consume and fire behavior yields flame length less than two ft. that burn with very low intensity. During the five year fire free interval there is less time for regrowth and fuel accumulation as compared to the other treatments. Yet when fire does burn where longer return intervals allow for more biomass accumulation and horizontal connectivity, mortality rates are higher which explains the immediate drop in cover seen in 10 year treatment sites as compared to the five year treatment.

In June 2009 we will conduct the 17th year remeasurement. Research Forester Andy Youngblood, PNW, La Grande is focused on the overstory and downwood composition and structural changes.

Prescribed Fire Effects for Juniper Control:

In 2002, twelve 40x60m (6 Control + 6 Rx Burn) plots were established in western juniper woodlands on the southern slope of Gray Butte in the Crooked River National Grasslands (CRNG) as part of the beta-test during the development of the FIREMON protocols. The site was dominated by 78-year-old juniper woodland, with density averaged 125 trees ha—1, and canopy cover averaged 28%. As part of a juniper removal effort, plots were prescribe burned in 2003. Remeasurements have been conducted annually for the last five years. We will switch to a two year remeasurement interval for the next five years (2009-2013).

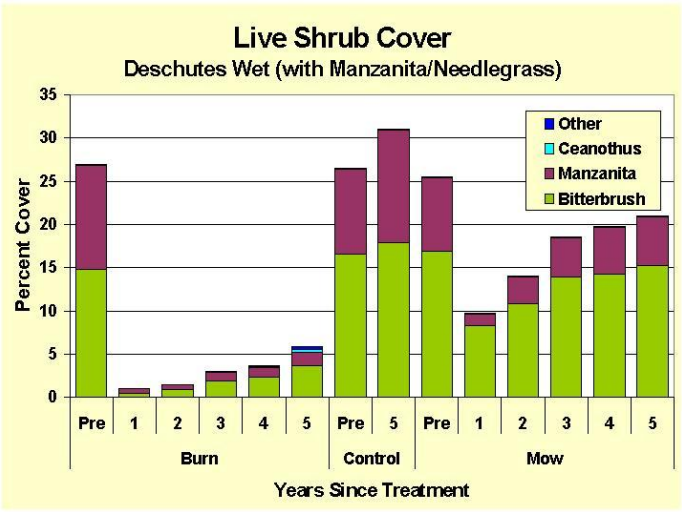
Post-Wildfire Salvage Logging Study:

In 2003, the 18 Fire burned approximately 3810 acres of ponderosa pine about 3.5 miles southeast of Bend, Oregon. Three of the Deschutes Alternative Fuels plots, a control, a burn, and a mow plot, were burned by this crown fire. These three

plots were subsequently removed from the Alternative Fuels study, and became part of the new Post-Wildfire Salvage Logging Study. Three additional plots were installed, and each plot was assigned either salvage or non-salvage treatment. Salvage treatments occurred in 2004. All six plots were measured in 2008.

Old Growth Ponderosa Pine Long Term Monitoring Pringle Falls RNA:

Three long-term plots were treated with prescribed fire in 2006. These had been installed in 1982, and were remeasured in 2006 prior to treatment, and have since been remeasured in 2007 and 2008.



(left to right) Snowbrush (*Ceanothus velutinus*) one old root crown sprouts from a fall prescribed fire in the Pringle Falls Research Natural Area. Higher precipitation "wet ponderosa pine sites" produce higher biomass over time also burn with higher intensity are more likely to experience increases in snowbrush over bitterbrush. Snowbrush will reoccupy the site through resprouting and heat stimulated seed germination whereas bitterbrush is killed by higher intensity fire and does not require heat to trigger seed germination. Greenleaf manzanita (*Arctostaphylos patula*) also posses both seed and root crown sprouting fire adaptations may proportionally regain more cover than bitterbrush until overstory crown cover begins to limit understory light levels that bitterbrush can tolerate. Five year post-treatment total shrub cover is four times less in the prescribed fire treatments due to the near complete mortality compared to mowing where bitterbrush cover has regrown to near pretreatment levels.

2) Support to Interagency Mapping and Assessment (IMAP) Project

Partners include the Oregon Department of Forestry, USDA Forest Service Region 6, USDI Bureau of Land Management Oregon/Washington State Office, The Nature Conservancy, and the USDA Forest Service PNW Research Station. Other federal,

state, and non-governmental entities are involved, including the Western Wildland Environmental Threats Center and the Oregon Natural Resource Institute.
The modeling approach (VDDT) uses a simple state and transition model that treats vegetation as a few combinations of cover type and structure stage within each potential vegetation environment. Local experts from field units are building VDDT models, creating local expertise and ownership. The project will build and run current management and historical (natural disturbance) scenarios. Local units will build and run planning scenarios as needed.

Results at the watershed scale are fine enough for most or all Forest Plan-scale questions and for the state-wide assessment. Current vegetation data is developed using Gradient Nearest Neighbor methods (Ohmann and Gregory 2002) using FIA/CVS plots and/or stand exams (www.fsl.orst.edu/lemma/gnnpac). Areas where GNN does not work (e.g. non-forest and other gaps) will be filled from the current version of data from LANDFIRE, SAGEMAP, GAP, and other sources. Locally developed data can be used, provided they meet minimum standards and IMAP can generate polygon data if needed. Vegetation and other data meet Interagency Regional and USDA FS national standards.

Finalized VDDT models for East Cascades with Jim Merzenich. Simpson

Supported FVS Calibration of VDDT Models for East Cascades. Simpson

Coordinated East Cascades VDDT Models with Blue Mtn, NWO and SWO Ecologists.

Explored feasibility of IMAP product (GNN and VDDT models) use at the project scale. Simpson

3) Potential Natural Vegetation Modeling for Central Oregon (Also see lead work done in Area 1.)

Target working draft of sub-series Maps for the North Klamath and Deschutes Provinces by 01/09. Simpson

Supports IMAP (defines area where specific VDDT models apply)

Supports Pine Bark Beetle Risk Mapping Project

Implements New East Cascades Plant Association Classification (at the sub-series level). Draft Maps in progress.

4) Assisted the Forest Health Program

Support to Silvicultural Recertification Training (Klamath Falls, OR). A week long insect and disease training was offered 07/14/08 for the silviculture recertification requirement near Klamath Falls, OR. Simpson

Helped the Forest Health Program for the month of August, doing field work in areas with whitebark pine to monitor for the blister rust fungus. Lovtang

Refine bark beetle hazard mapping rule set with respect to site productivity including formal reports and presentations. This project examines the feasibility of applying a universal bark beetle hazard rating rule set across large and varied landscapes. These universal risk parameters will be calibrated by site-specific attributes such as site productivity, potential vegetation, and distance to high risk stands. This calibration process will be validated using aerial survey data together with existing 8-12 year-old vegetation maps on four test landscapes areas throughout Oregon. Simpson

5) Support to Forest Projects within Area 4.

Eastside Spotted Owl Habitat Analysis (developed queries of). Simpson

BLT Project (Crescent RD, Deschutes NF): Completed Landscape Ecology (HRV) Assessment using Viable Ecosystems tools. Simpson

East Maury Project (Lookout Mountain RD, Ochoco NF): Completed Landscape Ecology (HRV) Assessment using Viable Ecosystems tools. Simpson

Support for Viable Ecosystems toolbox in ArcGis Model Builder for project analysis. This toolbox implements local landscape vegetation analysis tools applicable on Ochoco, Deschutes, Fremont-Winema NF's: Coordinated upgrade of the tools for use in ArcGIS 9.2 environment.

6) Cheatgrass probability in Central Oregon

Understory data from Current Vegetation Surveys (CVS) throughout the Deschutes and Ochoco National Forests and the Crooked River National Grasslands were compiled, and the presence of cheatgrass (*Bromus tectorum*) was determined for 1098 plots. Before analyzing the data, a Pearson Correlation Coefficient was performed in SAS. Logistic regression techniques were used to develop models for predicting cheatgrass populations. The following variables were selected as the best predictors of cheatgrass: (precipitation in inches), (minimum January temperature), (total trees per acre), and (juniper per acre). The Receiver Operating Characteristic (ROC) = 0.884; ROC ranges from 0.5 to 1, where 0.5 corresponds to the model randomly predicting the response, and a 1 corresponds to the model perfectly discriminating the response. Using the equation from the logistic regression, a probability for cheatgrass infestation was calculated for each CVS plot.

Maps are available at: T:\r06\ochdes\so\program\r6eco\cheatgrass_maps. We anticipate a refinement of the model and map as better spatially explicit soils information become available. Lovtang and Riegel.

Plant Assoc Group	Average PPT	Average Min Jan Temp	Total Plots in PAG	BRTE infested plots	Actual: Infest/ total	Average predicted	Average Distance To road
Western Juniper Steppe	17.36	20.69	15.00	15	1.00	0.61	291.32
Western Juniper Woodland	12.58	22.64	75.00	63	0.84	0.82	231.93
Scabland Shrub	21.89	18.42	29.00	15	0.52	0.33	201.74
Ponderosa Pine Moist	21.42	19.11	33.00	17	0.52	0.27	102.44
Grassland	24.20	19.81	6.00	3	0.50	0.39	599.52
Xeric Shrub	13.16	19.07	13.00	5	0.38	0.41	473.00
Mixed Conifer Dry	27.44	19.78	229.00	61	0.27	0.21	264.09
Ponderosa Pine Dry	18.62	19.09	280.00	59	0.21	0.26	129.83
Mixed Conifer Wet	35.28	20.93	135.00	12	0.09	0.14	196.36
Lodgepole Dry	27.69	18.38	190.00	3	0.02	0.08	357.59
Meadow/Riparian	31.08	20.13	12.00	0	0.00	0.21	324.39
Mesic Shrub	30.30	17.64	4.00	0	0.00	0.09	652.56
Lodgepole Wet	32.96	19.22	17.00	0	0.00	0.05	218.12
Mountain Hemlock Dry	64.74	18.76	60.00	0	0.00	0.01	2111.66

The plots were assigned a plant association group (PAG) and the average predicted probability, as well as the actual ratio of (infested plots in PAG) ÷ (total plots in PAG), was calculated for the PAGs in which the CVS plots fell. Based on PAGs, other environmental averages are given in the table above.

7) Washington Office Assistance: Oregon Rangeland Pilot

In 2006 representatives of BLM, NRCS, and USFS proposed that the Sustainable Rangeland Roundtable (SRR) support development of a pilot project that will formally test definitions, protocols, and operational capabilities for conducting a national assessment of rangelands. The thirteen county area of Central Oregon was chosen the for the pilot as there were existing soils and vegetation base information, and good working relationships existed across agencies, had a mix of state, private and federal lands, and a mix of range types across the federal agencies that manage the rangeland resource.

The overarching goal of the "Oregon Rangeland Pilot" is to test the operational feasibility of a strategic inventory of all private and public rangelands using existing sampling designs from NRCS's Natural Resource Inventory (NRI) and USDA Forest Service's Forest Inventory Analysis (FIA). The secondary goal is the development of a data base, interpretive inventory and for future monitoring reports addressing the extend and amount of for range indicators: 1) bare ground, 2) vegetation composition, 3) invasive plants, 4) fragmentation of rangelands, and 5) amount of "Rangeland" and changes in use over time.

Assisted in database proofing, and reviewed all aerial and on-the-ground plot photos to validate the slightly differing definitions of range, woodland, and forest cover types used NRI and FIA to determine old growth juniper versus invasive juniper sites. All plots were broadly classified into groups using TWINSPAN and cluster analysis. These broadly defined groups were utilized for statistical analyses by the Range Pilot Design Team. A draft final report has gone through an internal review and is in the process of a broad external review. Gregg Riegel is a member of the Rangeland Pilot Technical Team. Lovtang and Riegel

8) National Riparian Technical Guide

This project began in spring of 2007. Gregg Riegel is one of eight national team members and represents the Pacific Northwest Region. The purpose of is to develop a protocol for inventorying and monitoring riparian vegetation. This guide will propose a consistent and scientifically credible approach for inventorying and monitoring of riparian areas on National Forest System lands. The technical guide proposes to develop a hierarchical definition of riparian areas and a suite of protocols stratified by ecoregion.

9) Consulting

Region Range Program Support. Riegel

Rogue-Siskiyou NF meadow and fen and T&E plant and livestock grazing issues. Mt Hood NF meadow T&E plant and livestock grazing issues.

Completed Landscape Ecology (HRV) assessment using Viable Ecosystems tools for the BLT EIS (Crescent RD, Deschutes NF). Simpson

Completed Landscape Ecology (HRV) assessment using Viable Ecosystems tools for the East Maury Project, Lookout Mountain RD, Ochoco NF. Simpson

Developed potential production model for Matsutake mushroom for the Crescent RD, Deschutes NF. Baker

Modoc NF, Fuel treatments effects in ponderosa/pine bitterbrush, and juniper and sagebrush ecosystems. Riegel

Support for Viable Ecosystems toolbox in ArcGis Model Builder for project analysis. This toolbox implements local landscape vegetation analysis tools applicable on Ochoco, Deschutes, Fremont-Winema NF's: Coordinated upgrade of the tools for use in ArcGIS 9.2 environment. Simpson

Fire Learning Network Technical Team. Assist with VDDT model development and FRCC map review. Working on Upper Deschutes Basin, and the Lakeview Stewardship Unit (Sprague) Teams. Simpson and Riegel

Bridge Creek Wildland Fire Review Team, Ochoco NF. Riegel

Served as consultant for the Biological Evaluation, plant survey and noxious weed evaluation for the Flymon thinning fuels treatment RD 1170 reconstruction. Baker

Served as consulting botanist on several NEPA projects for all districts on the combined Des-Och forests. Baker

Ten year riparian plot remeasurement in the McKay Creek watershed, Lookout Mountain RD, Ochoco NF. Beta-tested the riparian scorecards for the Range Program NEPA analysis. Baker

Cooperation, Technology Transfer and Publications

Simpson, M. 2007. Forested Plant Associations of the Oregon East Cascades Guide. USDA Forest Service Pacific Northwest Region Technical Paper, R6-NR-ECOL-TP-03-2007. Simpson and Lovtang

Busse, M.D., and G.M. Riegel. Response of Antelope Bitterbrush to Repeated Prescribed Burning in Central Oregon Ponderosa Pine Forests. Forest Ecology and Management. In Press.

Busse, M.D., P.H. Cochran, W.E. Hopkins, W.H. Johnson, G.M. Riegel, A.W. Ratcliff, and C.J. Shestak, and G.O. Fiddler. Developing resilient ponderosa pine forests with mechanical thinning and prescribed fire in Central Oregon's Pumice Region (Canadian J. of Forest Research). Accepted with revisions.

Shovlain, Amie M., Deanna H. Olson, William J. Ripple, and Gregg M. Riegel. Grazing Effects on Oregon Spotted Frog (Rana pretiosa) Habitat Use and Vegetation at Jack Creek, Oregon. In review or press??? Journal of Herpetology.

Vasquez, E.A., G.M. Riegel, and T.J. Svejcar. Litter Decomposition rates in a Sierra Nevada Riparian Meadow as a Function of grazing Treatment and Distance from Creek. Submitted to Rangeland Ecology and Management.

Johnson, E. and G. Riegel. Annual Progress Reports for Administrative Studies: Alternative Fuels Treatment Fuels, Fire Return Interval, and Rx fire Juniper Control.

Lovtang, S. Literature review and summary of climate change, possible forest management issues, and how to calculate carbon budgets for Regional Ecologist.

Lovtang, S. and G. Riegel. Cheatgrass prediction model for Central Oregon. Draft document and presentations.

Dwire, K. M.E. Manning, D.M. Merritt, B.P. Bledsoe, E.A. Carlson, M. Coles-Ritchie, J.L. Grove, C.D. Peltz, L. Polvi, G. Riegel, D.A. Weixelman, E. Wohl. 2008. Development of a National Riparian Inventory and Monitoring Guide for National Forest Service Lands. Amer. Water Res. Assoc., Riparian Ecosystems and Buffers Conference: Working at the Water's Edge Summer Specialty Conference, June 30, 2008 Virginia Beach, VI.

Alternative Fuels Treatment Study-Central Oregon Fire Management Service: 1) Fuels Committee, 2) Zone FMO meeting. Deschutes and Ochoco wildlife biologists. Johnson and Riegel

Central Oregon Fire Management Service Fuels Committee.

Supported Silvicultural Recertification Training (Klamath Falls) five day course. Simpson

Worked with Americorp volunteer for two weeks in the field season. Johnson

Taught elementary school the role of fire ecology and explored the wonders of the repeated fire return interval study at the Metolius Research Natural Area. Johnson and Lovtang.

Field Trip with Rick Miller's graduate level Fire Ecology class, OSU Repeated Fire Interval Study, Metolius RNA.-Riegel

Central Oregon Community College students study plant response to prescribed fire in a post-fire monitoring exercise on Gray Butte, Crooked River National Grasslands. Gregg Riegel teaches Fire Ecology and Effects (Forestry 209), a 3.0 unit class; during the Spring Quarter (March-June).

Graduate committee member, Oregon State University. Riegel

1. Quistberg, S. 2007. Monitoring Success of Beaked Sedge in Reconstructed Channels Using Modified Greenline and Plant Functional Groups. M.S. Dept. of Range Ecol. and Manag., OSU. Completed November, 2007.

2. Donato, D.C. 2008. Effects Salvage Logging and Repeated Fire Disturbance on Regenerating. Ecosystems. Ph.D. Dept. of Forest Science, OSU. Completed April 2008.

3. Wiseman, J. 2008. Riparian Site Capability in terms of woody riparian species along streams in Northeast Oregon. M.S. Dept. of Range Ecol. and Manag., OSU. Completed May 2008.

4. Sabin, B. 2008. Estimating Western Juniper Biomass for Potential Co-Generation Utilization. M.S. Dept. of Forest Resources, OSU. Completed June, 2008.

5. Hoban, I. Physiologic Response of Bitterbrush to Varying Resources Gradients. M.S. Dept of Forest, Range., and Watershed Stewardship, Colo. State Univ. Expected completion date, June 2010. Co Major Professor.

Southwest Oregon Area Ecology Program (Area 5)
Siskiyou NF, Umpqua NF, Rogue River NF,
and Coos Bay, Medford & Roseburg BLM

Team: Frank Price, Chris Sheridan, Paul Hosten, Charley Martin, Pat Martinez, Tom Sensenig, Diane White

Projects: (1-9 numbered below)

1) Establishing LIDAR training plots

Emerging technology, termed LIDAR (Light Detecting and Ranging), is believed to have the potential to revolutionize the application of ecology by expanding the scale of the current methods where generalizations are extrapolated from small plots. By using LIDAR, it may be possible to quantify 100% of a forest attribute across entire landscapes. However, the future use of these methods requires the development of tools to accurately interpret LIDAR signals. The ecology program has taken the lead on establishing LIDAR training plots in the field involving measurement of

vegetation, stand structure, shrubs, and fuels and down wood across the range of varying sites. Field work is expected to continue through 2011.

2) Fire history research

In the dry forest ecosystems of southwest Oregon it is important to understand the role fire played in the development of late-successional habitat. Fire modified stand

characteristics and ecological processes occur with each event by affecting the distribution and density of surviving trees and shrubs, stand composition and growth, and stand structure and habitats. The ecology program is assisting High Cascades Ranger District forester and OSU student, Judd Lehman, in a fire history research effort to assess the ecological status of Late Successional Reserves in that area.

3) Assess impact on rare plant

Often there are competing interests among differing land use advocates. Livestock grazing in forested areas on NF lands presents a unique challenge because some sensitive species can be impacted by browsing. The ecology program prepared an assessment of the potential impacts by livestock on *Illiamna Latibracteata*, a rare fire dependent plant endemic to the Siskiyou Mountains of southwest Oregon. (Available)

4) Prepared ecological analysis

Appropriate Management Response permits the use of fire for ecological purposes during naturally ignited wildfire. The Ecology program prepared an ecological analysis for the Rogue River-Siskiyou NF plan amendment in order to provide an "Appropriate Management Response".

5) Established permanent plots in Biscuit Fire salvage with Oregon State University and Pacific NW Research Station

The post Biscuit Fire salvage EIS included research to manage, assess, and compare the redevelopment of forest vegetation, of three different management strategies, with the eventual goal of recovering late-successional habitat. These landscape scale management strategies included prescribed burning, mechanical fuel reduction, and natural recovery, and encompassed a 30,000 acre study area. The ecology staff

worked with Oregon State University and the Pacific Northwest Research Station of the FS throughout the 2008 field season to implement the study by establishing permanent plots and collecting the necessary data to monitor future stand development.

6) Served as a member of the Fire Science Working Group

The USFWS Northern Spotted Owl Recovery plan was completed in 2008. The ecology staff served as a member of the Fire Science Working Group. The Fire Science Working Group reviewed, analyzed, and made recommendations to the USFWS on potential spotted owl management strategies in fire prone environments of southwest Oregon and northern California. In addition, the Spotted Owl Recovery Plan established a Klamath Province dry forest science team on which the ecology staff continues to serve.

7) Development and review for the region-wide Pacific Fisher Assessment

The Pacific Fisher is a Forest Service sensitive species, and a USFWS candidate for listed species. The ecology program participated in the development and reviews for the region-wide Pacific Fisher Assessment.

8) Interagency Mapping and Assessment Project (IMAP) preparation

Analyzed specific forest attributes for each southwest Oregon PAG (plant Association Group) from ecology plot data for incorporation into the Forest Service's FVS (Forest Vegetation Simulator) model in preparation for IMAP. Restructured Eco-Classes, plant association groups, and plant potential vegetation types to assist in Region–wide mapping and analysis efforts. Coordinated with the NWO ecologists in finalizing the new PAG's and IMAP groups for all of the Series in Southwest Oregon.

9) Development of VDDT models for southwest Oregon

VDDT (Vegetation Development Dynamic Tool) is a forest landscape model that simulates and compares the amount, age, and structure of vegetation types among varying future management scenarios. Our ecology program assisted PNW's Jim Merzenich and Allison Reger in the development of VDDT models for southwest Oregon's 20 vegetation types. This involved analyses of stand growth rates, disturbance probabilities (fire, insects, disease, wind) and their effects on stand conditions, structures, and regeneration.

Cooperation, Technology Transfer and Publications

Seeking opportunities and funding to pursue the advancement of ecology is an important goal. During 2008 the ecology program, along with PNW, have prepared and promoted two proposals for research funding involving the Oregon Governors Watershed Enhancement Board and US Timber Endowment, funded through the US tariff on foreign lumber imports. The proposals include research on post fire aquatic and riparian habitat, upland stand recovery and development, the testing of management strategies, and LIDAR calibration.

Prepared an article in collaboration with the Rogue River–Siskiyou National Forest, Pacific Northwest Research Station, Department of Natural Resources and Environmental Science, University of Nevada, Evergreen State College, and Oregon State University: Regional Influences of Climate, Fire, and Topography on Contemporary Age Structure Patterns of Douglas-fir at 205 Old Forest Sites in Western Oregon. Nathan J. Poage, Peter J. Weisberg, Thomas S. Sensenig, Peter C. Impara, John C. Tappeiner. Submitted in review. Canadian Journal of Forest Research.

"The ecology of fire prone landscapes on the Rogue River-Siskiyou National Forest" at the Global Institute for Sustainable Forestry, Yale School of Forestry & Environmental Studies, New Haven, CT.

"Silviculture and fuels of southwest Oregon fire prone forests" at the Pennsylvania Sate University, State College, PA.

"The development of Late-successional habitat in frequent fire ecosystems" at the Yale Law School Graduate Program, Yale University, New Haven, CT.

"Dynamic of Coastal forest ecosystems under potential climate change scenarios" at the Chetco River Watershed Council, Port of Brookings, Brookings, OR.

"The Rogue River-Siskiyou National Forest - Biscuit fire ecology" at the Pennsylvania State University, State College, PA.

"Fire history and late successional stand ecology of the Ashland Watershed" at the Environmental Study's plant ecology class, Southern Oregon University, Ashland, OR.

Our ecology program assisted with a senior project at "Cross Roads," an alternative high school for especially challenged students. With our assistance, a student developed and implemented a forest health prescription involving tree marking, cutting, and fuel reduction work on a test plot, then prepared a final paper discussing forest management and health.

Northwest Oregon Ecology Program (Area 6)
Mount Hood, Siuslaw, Willamette National Forests, Columbia River Gorge National Scenic Area, in cooperation with Salem and Eugene BLM Districts and the Central Cascades Adaptive Management Project

Team: Cindy McCain, Jane Kertis, Jeanne Rice, Robin Dobson, Richard Hardt, Nancy Sawtelle, Barbara Raible, Hugh Snook, Linda Geiser, Nancy Lankford, Cheryl Friesen, and Jenny Lippert

Projects: (1-16 numbered below)

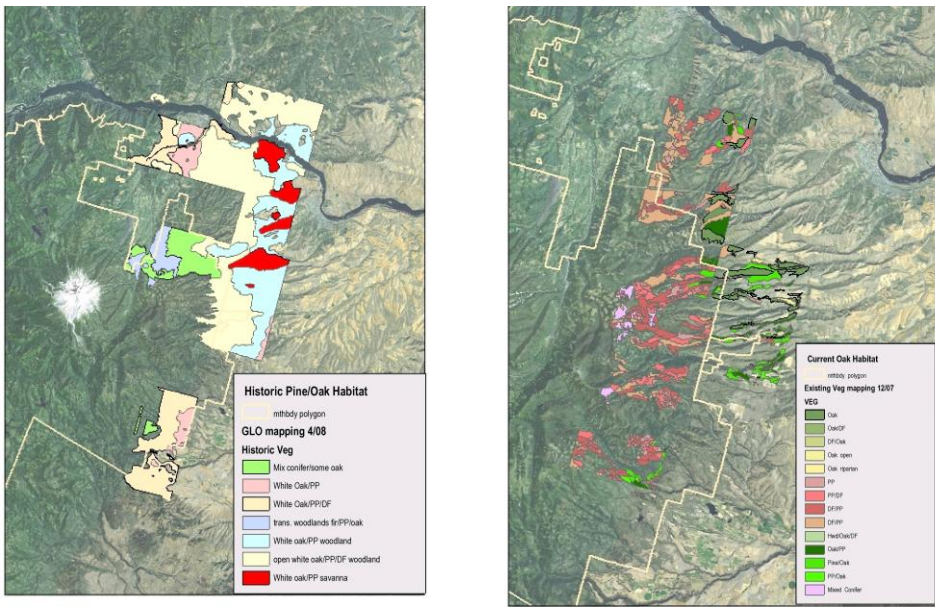
1) Oak/Pine Historic and Existing Vegetation Mapping for northwest Oregon

   Oregon white oak, black oak and ponderosa pine habitats have decreased dramatically from historic conditions. Prairies and Oregon white oak savannas in conservation status currently occupy less than one percent of their historic area in the Willamette Valley. Most of the remaining habitat is in private ownership. Listed as conservation

concerns in the West Cascades ecoregion, these habitats host over 200 wildlife species, many are currently at-risk. Among many experts, there is grave concern that an important component of biodiversity may be lost in our lifetimes.

The objectives of this project are to take a landscape level approach to fuels management through ecological restoration by mapping existing and historic oak and pine habitats, sample existing habitats for structural and compositional data, and to help land managers to restore oak/pine habitat and reduce fuels and fire behavior. Mapping efforts began in 2003 in the Willamette Valley (BLM, FS and private) and have extended to the Mt Hood NF and CRGNSA in 2006. In 2008, four quads were mapped for existing vegetation; three in Columbia River Gorge and one on the eastside Mt Hood. For historic vegetation, two townships on the eastside Mt Hood were mapped. This completes six sets of mapped existing and historic oak pine communities for the eastside of the Mt. Hood National Forest and Columbia Gorge.

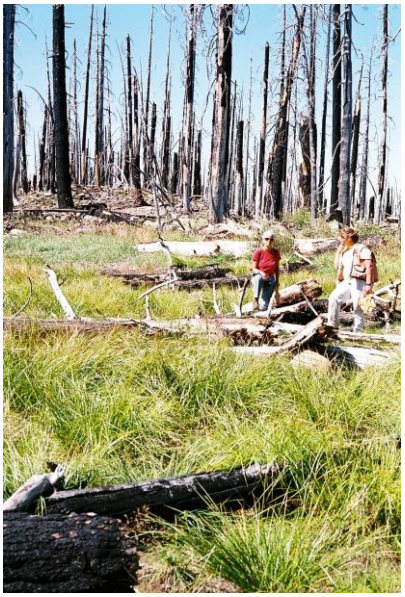
The existing vegetation work is being done by Northwest Habitat Institute, with review from Forest Service ecologists. The historic vegetation work is being done by The Nature Conservancy using General Land Office (GLO) survey notes. This information will form a critical baseline for understanding the potential extent of oak pine habitat, and will be invaluable in developing a restoration program.



Historic and current vegetation mapping for Oak/Pine habitat on the Mt Hood NF and Columbia River Gorge.

2) DecAID application in NW Oregon: Deadwood assessment

The objective of this project is to provide forests with data to assess deadwood conditions through comparison of current vegetation conditions using Janet Ohmann's Gradient Nearest Neighbor (GNN) coverage (http://www.fsl.orst.edu/lemma/common/dataDictionary.php) and reference conditions using DecAid (https://wwwnotes.fs.fed.us/pnw/DecAID/DecAID.nsf) inventory data modified by analyses of finer vegetation groupings (FY07 NWO Ecology project). The GNN-derived current conditions, for snags and logs, have been summarized by DecAID Wildlife Habitat Types for NW Oregon 5th field watersheds. FY08 results were a test of the process. FY09 work is building on the FY08 results using updated current vegetation grids and adding areas of high density snag patches derived from fire polygon coverages and cumulative aerial detection mapping for insects and diseases. This will help forest provide landscape context to their deadwood prescriptions, develop a forest level strategy for management deadwood and help with upcoming plan revision.



3) Whitebark Pine

A keystone species in high elevation forests, there is increasing concern about the status of this species because of the widespread and well-documented decline of white bark pine from substantial blister rust infection, mountain pine beetles, and encroachment. There is a need to quantify the status of the Pacific coast WBP and identify restoration opportunities. This project continues to contribute to the regional effort led by Carol Aubry in developing a restoration strategy for the region and contributing to a genetic assessment of WBP populations.

This year, we completed the initial prioritization of specific WBP habitat areas, based on fire history, access, and wilderness/non-wilderness and identification of potential treatment units. The final Restoration Strategy is due out early FY09. We are currently seeking partners and funding sources for an educational outreach effort. The outcome of this project will lead to identification and development of restoration projects and opportunities tied to the regional

(Pacific coast) conservation strategy and raising public awareness of the restoration needs which could potentially lead to partnerships, collaboration and volunteers for restoration work. In FY09, we will continue with some additional condition surveys in the 501 and 502 Conservation Areas.

4) Condition survey on the Willamette NF

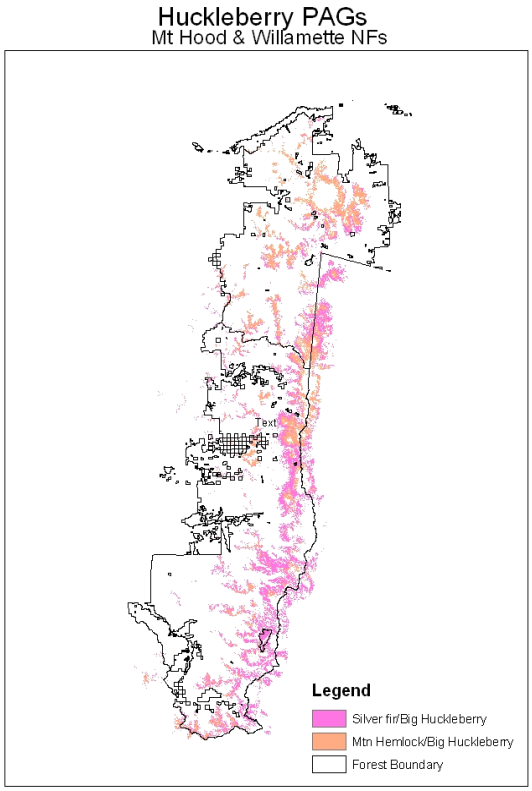
Huckleberry Restoration: In June 2008, a huckleberry workshop was presented in Warm Springs, OR (http://www.reo.gov/ecoshare/huckleberry/). This was a collaborative effort between the Confederated Tribes of Warm Springs, the NW Oregon Ecology group, OSU extension, and the Mt Hood NF to bring together the most current knowledge of huckleberry management. Contributions were also made by the Confederated Tribes of the Siletz Indians, PNW, and Mt Hood Meadows Ski Resort.

The workshop provided field managers with information on the ecological, cultural and economic importance of the resource; the need for a strategic approach which balances needs; and field examples of restoration efforts. The workshop is the first step towards developing a framework for sustainable management of huckleberries and other "First Foods" in partnership with the tribes. There were over 110 attendees, seven tribes and eight national forests represented.



Above, left: Cultural panel members – David Lewis of Grand Ronde tribes and Robert Kentta of Siletz tribes.
Above, middle: Clay Penhollow (Warm Springs) & Steven Fitzgerald (OSU Ext).
Above, right: Cindy McCain & Jeanne Rice – NW Oregon Ecology Group

Photo of crowd: Matt Jimenez (BIA) leading the field trip on Warm Springs Reservation.



Right: PAG map showing potential huckleberry habitat on the Mt Hood & Willamette NFs and on the Warm Springs Reservation.

Take home messages: the awareness that many projects can affect huckleberries, the importance of huckleberries to the tribes, the need to work together (tribes and FS), tribal perspectives and their seamless connection to the land, and the project examples that were presented along with the field trip.

Salmonberry Timber Sale was one of the first thinning projects on the Mt Hood NF geared towards enhancement of huckleberries. In 2004, photo monitoring of this harvest unit began after harvest to monitor huckleberry plants response after harvest treatment. This project is contributing to the Palomar gas line project in terms of huckleberry response to treatments.

5) Sustainability Monitoring

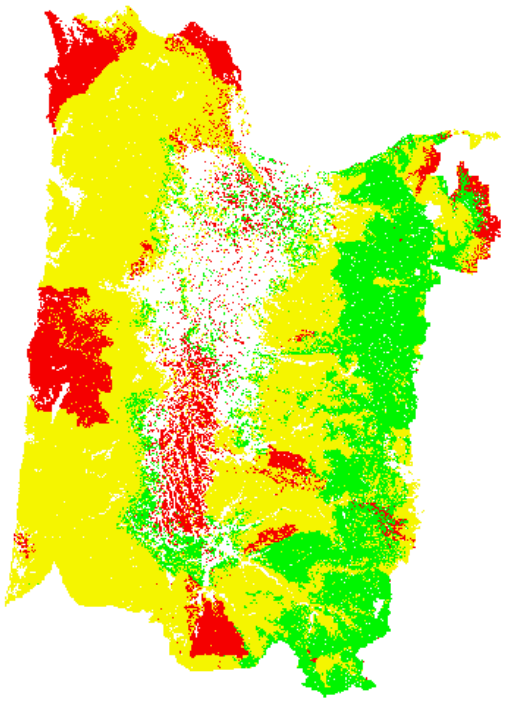
The priorities for the implementation of the sustainability monitoring program are to explore applications of criteria and indicators at the Forest level for monitoring; to prepare the Forest for plan revision; and to explore linkages between local, state and national efforts to contribute to better understanding of national trends. As the efforts

continue to refine the national indicators of overall ecological conditions for the 2010 edition of the National Report on Sustainable Forests, interest has shifted to how the Montreal Process C&I are being applied at various scales for monitoring and/or other efforts.

The Roundtable for Sustainable Forests has asked for our participation in refining national indicators and presenting our efforts in the application of criteria and indicators. From FY03 to 08, the focus was on completion of two projects: the transition of the Forest Plan monitoring report to a systems-based approach and the General Technical Report for the Olallie Protocol: An Applied Sustainability Analysis, a case study looking at using these criteria and indicators to develop sustainable forest management prescriptions. In December 2007, the Forest Service International Program presented our efforts in applying criteria and indicators to forest plan monitoring. In 2008, the Mt Hood Forest Plan Monitoring Report (http://www.fs.fed.us/r6/mthood/publications/documents/2008MonitoringReport-Version%202.pdf) was reformatted to incorporate the Oregon Board of Forestry's Strategy for conservation and sustainable management of all Oregon forests. Using widely recognized MP criteria and indicators as a framework for assessing sustainability, the report provides context on how national forest work relates to larger scale sustainability framework being used statewide and globally.

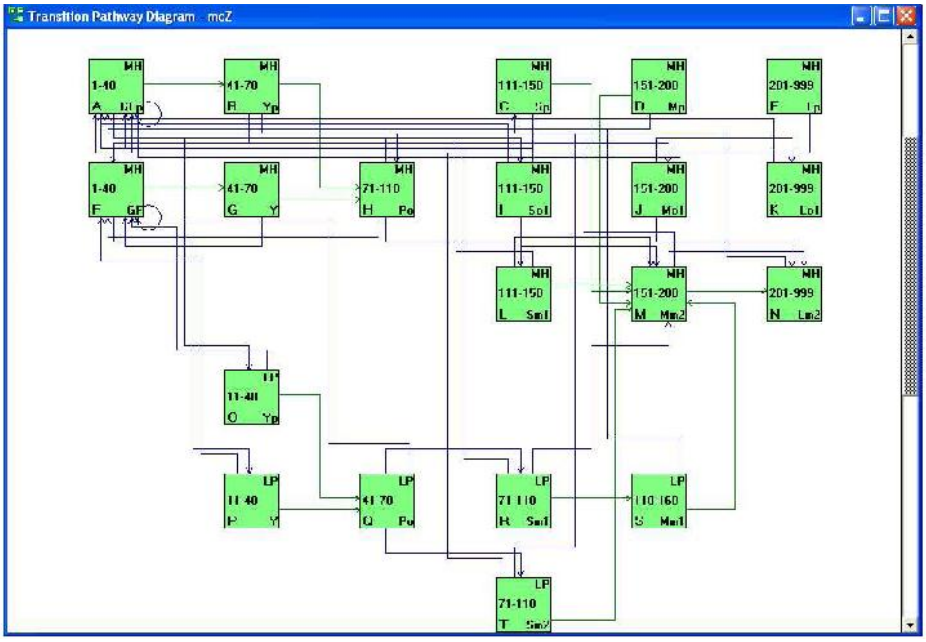
6) Fire Regime Condition Class

A Fire Regime Condition Class Analysis of seral class distribution was completed in FY07 using local data sources (e.g. plant association group layer crosswalked to biophysical settings, Interagency Vegetation Mapping Project (IVMP) data updated with a change detection layer, and fourth and fifth field watershed boundaries). Output grids and documentation are available on the Ecology website (www.reo.gov/ecoshare). Outputs from the analysis were shared across the Siuslaw, Willamette and Mt. Hood National Forests, as well as Salem and Eugene BLM districts. Reviews on the Mt Hood, Columbia River Gorge National Scenic Area and Willamette National Forests resulted in some minor Bps designation changes. A quick comparison of IVMP seral classes and the Willamette National Forest vegetation layer were surprisingly similar, increasing the confidence of the output for local users.



7) Stand Development and Successional Pathways (includes Interagency Mapping and Assessment (IMAP) project)

A team of NW Oregon ecologists and silviculturists developed a list of potential vegetation types (pvts) to model, building on the previous work from the Central Oregon Landscape Assessment (COLA). Ecologists from NW and SW Oregon coordinated on developing a comprehensive list of pvts across western Oregon. We developed 11 draft vegetation dynamic development tool (VDDT) models, working with our local analyst. Several review sessions have refined and improved models. Review sessions have been conducted with SW and Central Oregon IMAP staff to consolidate models and make sure they will work in other geographic regions. Our team, in coordination with Regional Office staff, began calibrating the Forest Vegetation Simulation (FVS) tree and stand growth models to help evaluate the states and transitions in our VDDT models. Inventory plots have been assigned pvt designations.



A VDDT vegetation model developed for NW Oregon

8) Post fire effects in Northwest Oregon forests (includes Warner, Waldo)

Work continues on analyzing and reporting results from two ongoing post fire projects, partnering with National Park Service. A general technical report is expected in FY09 outlining 14 years of post fire vegetation and coarse wood development at the Warner Creek Fire. Ten years of post fire snag and down wood development will be described for the high elevation Waldo Lake Fire in a journal article expected in FY09.

9) Research Natural Area (RNA)

Willamette NF's Torrey/Charlton RNA wetland ecotone post-wildfire recovery.

Siuslaw NF's Sand Lake RNA European beachgrass control

10) Forest Interdisciplinary (ID) Teams

Ecologists served as members of interdisciplinary teams for the following projects:

Willamette NF/ Deschutes NF ID Team--Fire Ecology core member for Mt. Jefferson, Three Sisters and Mt. Washington Wildland Fire Use Wilderness Plan.

Salmon River Estuary restoration IDT— vegetation restoration, non-native invasive species control.

Siuslaw NF ID Team: Salmon River Estuary restoration IDT—vegetation restoration, non-native invasive species control.

11) Willamette NF Mutton Meadow spring vs. fall meadow monitoring

Two types of prescribed underburning in Mutton Meadow (about four miles up-river form the Jim's Creek project area) was done to test prescribed fire timing on Oregon white oak and pine of various stem calipers, and to measure the response of grass and non-native vegetation.

12) Willamette NF Priority Watershed Restoration Planning team member

13) Mt Hood NF Environmental Management Systems Unit Representative

Coordinate training, activities, communications, and implementation of the 2008 EMS. Maintains EMS records, completes monitoring report and conducts management review.

14) Siuslaw NF's Marys Peak Scenic Botanical Area

Monitoring of meadow restoration after encroaching trees were removed, burn piles reseeded, edges reseeded.

15) Mt Hood Forest Climate Change Contact to the R6 Strategy Group

Forwards communications on the Forest Service strategy towards climate change.

16) Mt Hood NF Forest Plan Monitoring Report

Updates, reviews and edits the monitoring report each year.

Consultation, Cooperation and Technology Transfer:

Fire Regime Condition Class: Technology transfer sessions with the Willamette National Forest Fuels Group, Sweet Home District Interdisciplinary Team, eastside Mt Hood National Forest Interdisciplinary Team, and Middlefork District, in addition to individual sessions with Salem BLM fire to describe the FRCC analysis concepts, inputs and results. We also reviewed each output and discussed appropriate interpretation and use in project planning, analysis and reporting. We have begun work with the Gifford Pinchot National Forest fuels specialist to develop layers and perform a FRCC seral class analysis for several wilderness areas that are getting a wilderness fire plan developed.

NW Oregon Information Sharing Workshop and Newsletter: The NW Oregon Ecology Group organizes a one day event every year. The theme for FY08 was "Back to the Future: Restoration for a Reason". Talks covered research and restoration on montane meadows, collaborative treatment of camas prairie to restore populations of historic and current importance to local tribes, restoration of estuaries in Oregon and Washington, as well as wetland and oak savannah restoration projects in the southern Willamette Valley.

Natural Resources Conservation Service collaboration in NW Oregon Coast Range: ecologists and soil scientists worked together to improve vegetation and soils relationships, using the Ecology Program Potential Natural Vegetation model and data collected in Tillamook and Benton Counties. The collaboration resulted in incorporating 445 plots into the model, of which 308 included extensive understory species data. FY09 work from this project is to document two new plant associations identified from higher elevations in the northern Coast Range, and to revise the plant association group component of the model to reflect the new data.

West Cascades elk forage assessment: wildlife biologists and ecologists are working to relate elk forage potential to plant communities at the association or association group levels. Work in FY08 identified the plant species of interest and preliminary elk forage quality. Objective of the project is to provide better information on potential elk habitat and to better predict quality of elk habitat after treatments such as thinning. Work in FY09 will summarize community forage potential, and review next steps in quantification or validation.

Estuarine restoration: we have partnered with researchers in the Cooperative Institute for Coastal and Estuarine Environmental Technology grant "In-Situ Multichannel Wireless Sensor Networks and iButton Temperature Logger Arrays in Characterizing Habitat Drivers in Tidal Wetland Reference Sites". This year has seen vegetation, soils, and macroinvertebrate sampling collected in 2007 summarized, reference site elevations surveyed (working with National Geodetic Survey), and NFS elevation data used to analyze iButton data, among other tasks. The objective is to establish the relationship

between tidal regime, soils conditions, and estuarine species in order to develop a full description of reference sites suitable for use with estuarine restoration projects. Ecology funds have also supported related estuarine monitoring on Siuslaw NF lands.

Long term estuary restoration data: Ecology program has centralized and archived vegetation data from Dr. Bob Frenkel (and students). The data were shared by OSU and USFS. The long term studies of the Salmon River Estuary are from the Siuslaw NF's Cascade Head Scenic Research Area, and cover marsh restoration projects beginning in the mid-1980's.

Heceta USFS/BLM ACEC monitoring project: Ecology program arranged for low elevation flights of a complex of rare dunes communities on Siuslaw and Eugene BLM lands These have been mapped, digitized and attributed. Low elevation flights may be used to monitor Off-Highway Vehicle impacts to vegetation communities on BLM and adjacent FS lands.

Classification and mapping of Oregon white oak in the Willamette Valley: NW Oregon ecology program partnered with Northwest Habitat Institute and The Nature Conservancy in 2006 to obtain a National Fish and Wildlife grant to describe the range of Oregon white oak communities and complete mapping the distribution of oak. This project followed up ongoing mapping work NW Oregon ecology group has been funding on federal lands. A total of 350 stands were sampled, and nine current oak community types were described. Current mapping can be found at www.nwhi.org.

Oregon Oak Communities Working Group Spring 2008 Workshop in Eugene Oregon: the NW Oregon Ecology group, represented on the steering committee, helped organize this one day workshop, highlighting work completed in the Willamette Valley (see above).

A Landscape-Level Approach to Fuels Management Through Ecological Restoration: Developing a Knowledge Base for Application to Historic Oak-Pine Savanna: NW Oregon ecology program was co-principal investigators with University of Oregon in this Joint Fire Sciences grant award, completed in FY08. We examined trajectories of ecological change of oak savanna at seven sites across the Willamette Valley, foothills and Cascades. We also developed a suite of potential land management approaches. This project resulted in four completed masters' theses, a PhD dissertation in progress, two journal articles in preparation and several presentations. We then obtained a National Science Foundation grant award in FY09 entitled "The Interactions of Climate Change, Land-Management Policies, and Forest Succession on Fire Hazard and Ecosystem Trajectories in the Wildland-Urban Interface", partnering with University of Oregon, Oregon State University, and PNW. Project completion is set for FY11.

Regional USFS-BLM Research Natural Area steward meeting: BLM and FS employees working with RNAs across the Region met for 2 days in Corvallis to summarize current conditions and issues on RNAs in the Pacific Northwest, and to discuss future direction

for the program. One day focused on the potential for volunteers to supplement agency specialists in managing RNAs.

Training Attended: Landscape Ecology (UoM), Climate Change Shortcourse, Advanced Vegetation Dynamic Development Tool (VDDT) from the Portland office.

Program Goals FY09 and beyond:

Prepare for large scale forest planning: complete input necessary to run Interagency Mapping and Analysis (IMAP) scenarios for NW Oregon; complete work on deadwood assessment and begin initial assessment on the Mt Hood NF as the pilot forest.
Provide fire ecology information to our clients: produce GTR and journal article for post-fire studies at Warner Creek, Waldo Lake, as well as fire history of Willamette Valley foothills and report on Cascade Crest fire history; continue technology transfer and consultation with fire regime condition class (FRCC) analysis process and implementation.

Provide information on special habitats: oak pine work, estuaries, forest level mapping.

Pacific Northwest Regional Office
33 SW First Avenue, Portland, Oregon

Team: Tom DeMeo, Kim Mellen, Louisa Evers, Jim Alegria, Tom Hilken

Administration

Secured a $1.55 million program budget for the regional ecology program, all of which was distributed to the Forests. This was a 6 percent increase over the FY07 level, reflecting the support we have earned from the accountability, networking, and integration of the program. As in FY07, an additional $220,000 was obtained for ecologists working on existing vegetation mapping and modeling (IMAP).

Provided leadership and mentoring for six area ecology programs in the Region with a total of 25 ecologists

Significant achievements were made in coordinating Natural Resource Information System (NRIS) data migrations to the Corporate Data Warehouse (CDW). This electronic database environment is housed on a central Forest Service server in Kansas City. Moving to this environment provides a common data environment for use in GIS and database applications.

Data migration for Terra, Wildlife, and FSVeg modules was completed in FY08. The Water module is the only major dataset with migration not yet completed. This module is complex and unique for Region 6, and is a focus of our migration work in FY09.

Another major accomplishment was the introduction of FSVeg Spatial in the Region. This common GIS environment will provide a consistent local vegetation layer throughout the Region. By the end of FY08 this module was introduced, and in early FY09 polygon standards were agreed on. Full implementation is underway, with completion expected by the end of FY09.

Amy Nathanson was recruited as an ecologist SCEP, and began a masters' program at Oregon State University. She is expected to convert to an associate ecologist position in the Rogue River-Siskiyou National Forest in late 2010. Ken Stella is completing his masters' at Northern Arizona University and will convert on the Malheur NF in August 2009. His position will be part of the Northeast Area ecology program.

Consultation, Cooperation and Technology Transfer:

National Interagency Fuels Technology Transfer (NIFTT):

Served as a standing member of the NIFTT team, providing training and support on landscape assessment, fire regime condition class (FRCC), and the FRCC maptool.

Worked as part of a NIFTT team to provide a day-long training in tools to use LANDFIRE map layers at Ft. Collins, Colorado (February 2008) and at Technical Fire Management (Bothell, Washington, October 2008).

Historic Range of Variation (HRV):

Attended the national Forest Service conference on this issue at Lansdowne, VA in April 2008. This in turn led to a Regional discussion coordinated by Cheryl Friesen of the Central Cascades Adaptive Management Partnership. Currently, I am working on some guidelines for HRV application in the Region, in cooperation with Tom Spies and Fred Swanson of the Forest Service Pacific Northwest Research Lab.