



Ecology Program Pacific Northwest Region USDA Forest Service



Accomplishments for Fiscal Year 2007
(October 2006-September 2007)

Annual Report

Ecology Program
Pacific Northwest Region
USDA Forest Service

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Ecology Program Purpose:

Applied science for better forest and range management.

Ecology Program Objectives:

The Region 6 Ecology Program provides the following services to the USDA Forest Service:

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

About Organization:

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.

The following pages summarize how the Region 6 Ecology Program has met program objectives in Fiscal Year 2007 (October 2006-September 2007).

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 (joined in FY2008)

Projects: (1-8 numbered below)

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

PNV Model Application: Continued development and refinement of PNV Model PC Application and help manual. Developed tools for analysis and display of data layers and model outputs. Enhancements of PNV model code: overhauled Plant Association Group (PAG) editing tools and Species Habitat model. Installation of PNV Model application for various end users. Provided PNV application support for all model users.

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

WASHINGTON: Field Calibration of Vegetation Zone Model for Eastern Washington, including installation of 328 checkplots; and a 2-day trip to NE Washington, Idaho border and northern Blue Mountains

OREGON: Field Calibration of Vegetation Zone Model for eastern Oregon and SW Oregon, including installation of 308 checkplots; and a week-long field trip to SW Oregon. Worked with Oregon R6 ecologists on vegetation zone models, including vegzone concepts and field calibration of model

PACIFIC NORTHWEST (data acquired, processed and incorporated into PNV Model): NRCS soils data for WA & OR; wrote code to extract information on soil moisture, geology & regolith. Developed WA & OR geology & regolith layers for PNV model, incorporating information from wetlands, hydrography, soils, glaciers and geology layers. SNOTEL weather station data for all Northern CA, ID & NV sites; computed 30 year temperature and precipitation averages.

PNV Overview Manuscript: Preparation of draft manuscript presenting overview of PNV model, conceptual basis, model development and vegetation zones of the Olympic Peninsula for submission to Ecological Monographs

2) Species Habitat Model

Finalized salal habitat model for Olympic National Forest. Habitat model to be used as a tool in management of this important special forest product.

3) IMAP Support

CVS and ecology core data points intersected with Landfire Rapid Assessment Potential Veg grid, TEUI sections coverage, IMAP study regions and Ecological systems grid. Surveyed and reported existing PNV products for OR & WA national forests & BLM, to evaluate potential for interim PNV product. Provided vegetation zone and plant association group models.

4) Ecology Database

Application development and maintenance of Western Washington Area Ecology Database.

5) Cook Creek Cedar Theft (Olympic National Forest)

Submitted final report to USFS law enforcement special agent and U.S. Attorney’s Office: “Assessment of the Ecological and Replacement Value of Old-Growth Western Redcedar Trees Lost in the Cook Creek Cedar Theft, Olympic National Forest, Washington”

6) Vegetation Management

Met with Darrington District Ranger and resource specialists to discuss red alder management, long term plan and strategy. Field trip and consultation with resource managers regarding management and monitoring of *Vaccinium membranaceum* (big huckleberry) on Mt. Baker-Snoqualmie NF. Met with Olympic National Forest botanists, regional botanist and resource specialists regarding management of *Iwatsukiella leucotricha*, a rare moss and sensitive species occurring in a timber planning area in the southwest Olympics.

7) Thinning Monitoring

Installed permanent plots for monitoring stands proposed for thinning treatments - Forgotten Thin (5), Salmon Creek (1), Mt. Baker-Snoqualmie National Forest; installation of temperature sensors in treatment and control stands at Forgotten Thin.

8) Ecology Benchmark Plots

Installed and remeasured Ecology Benchmark plots on the Mt. Baker-Snoqualmie National Forest, includes monitoring of thinning treatments.

Western Washington Ecology Program Plot Summary 2007

Plot type	Number of Plots			Plot Totals
	MB S	OLY	GP	
Benchmark Plot Installation	6			6
Benchmark Plot Remeasurement	4			4
Plot Totals	10	0	0	10

Consultation, Cooperation and Technology Transfer:

Presented paper at Northwest Scientific Association Annual Meeting “Species Diversity of Vascular Plants and Cryptogams of Old-Growth Forests across Environmental Gradients in the Western North Cascades.”

Regional Sensitive Species Program: provided PNV vegzone maps of WA and OR and consultation to Rick Dewey Deschutes NF botanist for analysis of habitat relationships of fungi and other sensitive species.

PNV Training: Provided 2-day training session and workshop for Region 6 Ecologists on USFS Potential Natural Vegetation Model developed by Jan Henderson. The focus of this workshop was 1) the models for mapping of Oregon PNV and environmental gradients, including geology, regolith and soils; 2) Plant Association Group model, and 3) discussion and development of a concept for a regional vegetation subzone model as an alternative approach to modeling and mapping a finer resolution of potential vegetation.

Olympic National Park current vegetation mapping project: provided consultation, data and map products.

Provided data and expertise to various graduate students conducting research on National Forests of western Washington, including stand age maps, distribution and ecology for species of interest, lichen biological diversity, field methodology, for students from University of Washington, University of British Columbia.

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.

Two weeks consultation with Forests for project reviews.

Provided potential vegetation (vegzone and Plant Association Groups) and environmental gradient maps in response to many requests both within and outside the agency (USFS, PNW lab, National Park Service, The Nature Conservancy, University of Washington).

Consulted with Deschutes National Forest Sisters Ranger District staff regarding timber theft and value assessment of damaged trees.

Consultation and review of mountain goat study proposal – wildlife biologist Mt. Baker District.

Training Attended:

Field ecology workshop (2-day) for resource specialists (MBS)

Ecology field trip for Forest leadership team (MBS)

Ecology field trip for recreation managers and volunteers at Heather Meadows, Mt. Baker District

Other:

Leshler attended Northwest Scientific Association Annual Meeting and Board of Trustees Meeting, February 2007 in Victoria BC

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

Mt. Baker-Snoqualmie Office Move

Program Goals FY08 and beyond:

Submit PNV overview manuscript for publication in Ecological Monographs

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

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

Complete Vegetation Zone Map for Oregon.

Develop Vegetation SubZone classification, map and model for Washington and Oregon.

Install and monitor ecology benchmark plots and thinning monitoring plots.

Publish papers on thinning monitoring, old-growth forest restoration, species habitat models.

Mt. Baker-Snoqualmie National Forest Office Guide.

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

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

Consultation on Area Forests.

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

**Team: Rod Clausnitzer, Terry Lillybridge (retired in early 2008), Richy Harrod,
Bill Gaines**

Projects: (1-13 numbered below)

1) Range Monitoring Summary (Okanogan-Wenatchee NFs)

Twelve C & T Clusters monitored in 2007

Methow Valley RD

Little Bridge C10

Poorman C48

Poorman C49

Tonasket RD

Annie C81

Annie C83

Annie C84

Annie C85

Fir C30

Fir C31

Toats-Coulee C45

Toats-Coulee C46

Toats-Coulee C55 (re-read)

Eleven C & T Clusters relocated in 2007 (priority 2008 monitoring)

Methow Valley RD

Gold C22

Hunter C28

Little Bridge C9

Newby C45

Wolf C12A

Tonasket RD

Annie C82

Annie C86

Annie C87

BS C43

Clark C77

Mutton Creek C76

Thirteen C & T Clusters w/ relocation efforts, not found in 2007

Methow Valley RD

Black Canyon C56

Buttermilk C59

Hungry C24

McFarland C37

McFarland C40

McFarland C41

McFarland C42

Newby C20 (Newby C46)

Tonasket RD

Big Canyon C29

BS C44

Fir C32

Fir C33

Salmon Basin C12

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

Six DMA Plots 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

Potential DMA Groups/Watersheds not monitored

3) NRIS/Database management:

Structural vegetation core data input into NRIS.

Stand structural data in need of some work.

Fy2006 range data input completed (NRIS and Access).

FY2007 range data work incomplete.

FY2007 PIBO monitoring data input but data verification needs work before it is sent on to Colville NF.

4) Plan revision:

Participated in review of vegetation dynamics model output for eco regions

Participated in wilderness review process.

Proposed RNA candidate (Maple Mountain).

5) Ecoplot Relocation/Resampling

Searched for 10 plots, 1 not located, 2 unsampled, 7 resampled with photos, estimates of understory cover, overstory mortality, standing dead and down woody material.

Data needs to be entered and summary of plots done. While this work will paint a picture of post-fire recovery in itself, it can be an integral part of an effort to assess BAER treatments (e.g., aerial mulching) and effects on vegetation recovery and successional development.

6) PNV/PAG model update

2007 spring meeting in Bend with emphases on Oregon PAGES, but agreement that areas would be responsible for correction/refinement of PAG model. Good tech transfer of model and process for updates. Area 1 Ecology is working to get PNV model completed for the PNW this year. Area 2 needs to assist in getting spatial plot data corrected so info can be used in PNV map “fine tuning” and eventual map accuracy assessment.

7) FRCC Workshop

Worked with The Nature Conservancy to do a FRCC Workshop in Naches. Attended by folks from the Washington State DNR, Yakima Indian Reservation, USDA Forest Service, and TNC. About 25 participants.

8) Whitebark Pine

Area Ecology supported cone collection and ecological assessment of whitebark pine ecosystem. In particular, efforts to locate disease-resistant populations for seed collection.

9) Okanogan-Wenatchee NF Fire Ecology completed analysis and report on snag decay and fuel accumulation in stands burned during 1994 wildfires and subsequently salvaged logged to provide information to the team planning salvage harvest activities in the 2006 Tripod Fire.

10) Okanogan-Wenatchee NF Fire Ecology completed field data collection in the 3rd and final year of post-treatment monitoring the effectiveness of *Pseudomonas fluorescens* strain “D7” in controlling the spread and density of cheatgrass (*Bromus tectorum*) and effects to native vegetation in shrub-steppe environments following prescribed fire.

11) Okanogan-Wenatchee NF Fire Ecology finished analysis, prepared maps, wrote and presented final report of the Swuak Area Fire History on the Cle Elum Ranger District. This area covered over 27,000 acres and included analysis of 667 fire scar samples and covered the period from 1600 to present.

12) Okanogan-Wenatchee NF Fire Ecology Installed field transects to monitor condition and mortality of fire damaged ponderosa pine following the 2006 Tripod Fire as a field validation procedure for model developed by Walt Thies and Doug Westlind at the Corvallis FSL.

13) Okanogan-Wenatchee NF Fire Ecology Collected snag retention data in long-term survey of fire-killed trees following the 2002 Deer Point Fire.

Consultation, Cooperation and Technology Transfer:

Coauthored “Development of current stand structure in dry fir-pine forests of eastern Washington” with Richard Everett, David Baumgartner, Richard Schellhaas and Richey Harrod. Published in Journal of the Torrey Botanical Society 134(2), 2007, pp. 199-214.

Coauthored “Defining and quantifying canopy strata” with Richard Everett, David Baumgartner and Richard Schellhaas. In Press (accepted for publication Nov. 2007).

Other:

Environmental education: dry site monitoring of Tripod burn in conjunction with high school program for science students. The students installed ecology plots for annual monitoring by the science classes. (5 days)

Collected and summarized regional fire history information as part of a JFS project on potential reburn of fire areas. P.I. - Dave Peterson, Wenatchee FSL.

Program Goals FY08 and beyond:

Preparation of report on post-treatment monitoring the effectiveness of *Pseudomonas fluorescens* strain “D7” in controlling the spread and density of cheatgrass (*Bromus tectorum*) and effects to native vegetation in shrub-steppe environments following prescribed fire will occur during winter of 2007/2008.

Analysis and progress report of findings on the snag retention data in long-term survey of fire-killed trees following the 2002 Deer Point Fire will be prepared in FY08.

**Northeast Oregon Area Ecology Program (Area 3)
Wallowa-Whitman, Umatilla, and Malheur National Forests**

Team: Dave Swanson, Jenifer Ferial, Ken Stella (SCEP student joined in FY2008)

Projects: (1-9 numbered below)

1) IMAP R6 Existing Vegetation Mapping project:

Finalized 14 VDDT models that cover all the non-forest and juniper types in the Blue Mountains/Hells Canyon area, and associated model documentation. VDDT is a vegetation disturbance and succession model. Completed nonforest VDDT model runs: 500-yr Historical Range of Variability (HRV) runs and 100-yr current management runs for the Blue

Mountains study area. Processed all input GIS data (from National Forest existing vegetation polygon coverages, gradient-nearest neighbor GNN analysis, and GAP project vegetation mapping) into input for VDDT models, for both forested and non-forested models. Composed a document describing the process used and many accessory data sources required.

2) Interagency Special Status Sensitive Species Program (ISSSSP) fungi project:

Compiled 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.

3) Blue Mountains Forest Plan Revision Support:

Reviewed draft Forest Plan Revision; attended Plan review meetings. Assembled a table of riparian vegetation characteristics, including fire regimes, for the team’s riparian specialist.

4) Fire effects studies:

Sampled permanent fire-effects monitoring plots for fires with dates ranging from 1986 to 2006. Malheur NF: 16 plots in 6 fires; Umatilla NF: 24 plots in 6 fires; Wallowa-Whitman NF: 53 plots in 14 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.

Established a new study of post-fire recovery of biotic soil crusts. Plots were co-located with established ocular macro-plots inside and outside of exclosures in two 2007 fires on the Umatilla and Malheur NFs.

Established a new study of raking effect on large pine survival in prescribed fires (Malheur NF). This is a cooperative study with Rob Progar (PNW Research Station). Carried out sampling fieldwork and funded of a crew for 1 pay period to complete the sampling.

Made reconnaissance visits to 41 existing permanent monitoring plots that burned in two large wildfires in 2007, to re-photograph and determine their suitability for future monitoring.

Updated our fire effects USFS Intranet web pages to include data available to date. This involved creation of fire effects summaries for 4 new vegetation groups, bringing the total to 37 vegetation groups with fire effects summaries on the web.

5) Ranger District Assistance:

Malheur National Forest, Emigrant Creek Ranger District, range monitoring plot sampling, 4 person-days.

Malheur NF, Prairie City Ranger District. Camp Creek and Lick Creek TES plant surveys, 5 days.

Umatilla NF, Walla Walla Ranger District, range monitoring plot sampling, 2 days, Brock Allotment clear-cut tree regeneration evaluation, 2 days. Written report completed.

Umatilla NF, Ukiah Ranger District, North Fork John Day Restoration Effectiveness Monitoring field visit and consultation on methods, 1 day

Wallowa-Whitman NF, La Grande Ranger District, Rangeland Health determinations (1 day), riparian Proper Functioning Condition determinations (2 days), West Eagle Meadow condition assessment (1 day) with written report completed.

Wallowa-Whitman NF, Wallowa-Valley Ranger District, Review of aspen restoration projects (1 day)

6) FRCC Implementation

Output of Fire Regime Condition Class (FRCC) mapping tools runs by Forest Plan Revision Team vegetation specialist was summarized into an Excel lookup table tool and posted on our web site. This tool allows users to look up existing watershed and stand FRCC, and includes current surpluses and deficits of structural classes. It is designed to aid in setting treatment priorities.

7) Implementation of “Interpreting Indicators of Rangeland Health”

Assigned NRCS Ecological Sites to major Terrestrial Ecological Unit (TEUI) map unit components in the Wallowa Valley Ranger District (north portion). Rangeland Health Reference Sheets for these Ecological Sites were obtained from NRCS and posted on our web site. A Rangeland Health Sampling stratification scheme using these data was developed for the Upper Joseph study area.

Completed a crosswalk table of Plant Associations to Ecological Sites and Rangeland Health Reference Sheets for use in areas without a TEUI.

8) Research Natural Areas

Implemented a challenge cost-share agreement with ONHIC to write establishment records for three proposed Blue Mountain RNAs.

9) Training provided

“Introduction to fire effects on vegetation” RX-310 Interagency fire training (Redmond, OR), two 1-hour sessions for 100 students, Redmond.

Training on local implementation of range assessment (“Interpreting Indicators of Rangeland Health”) and long-term effectiveness monitoring at the annual Tri-Forest range training session in La Grande.

Plant Association Guide training, 2 days, Malheur NF

Consultation/Cooperation and Tech Transfer:

Deep canyon and subalpine riparian and wetland plant associations of the Malheur, Umatilla, and Wallowa-Whitman National Forests (2006) by Aaron F. Wells. USDA Forest Service, Pacific Northwest Region, General Technical Report PNW-GTR-682, 277 pp. Published. This publication completes the potential vegetation classification of our area. Aaron Wells produced this work as a graduate student funded in part and advised by our Area Ecology program.

Potential vegetation hierarchy for the Blue Mountains Section of northeastern Oregon, southeastern Washington, and west-central Idaho (2007) by David C. Powell, Charles G. Johnson, Jr., Elizabeth A. Crowe, Aaron Wells, and David K. Swanson. USDA Forest Service, Pacific Northwest Region, General Technical Report PNW-GTR-709, 87 pp. Published. This publication is a valuable synthesis of all the potential vegetation work that has been completed in our area since the early 1980s; the authors include most of the major contributors to our various plant association guides.

Rangeland closures of northeastern Oregon: stories they tell (1936–2004) (2007) by Charles Grier Johnson, Jr. USDA Forest Service, Pacific Northwest Region, General Technical Report PNW-GTR-724, 33 pp. Published. This publication summarizes the knowledge we have obtained to date from the wildlife and livestock exclosures around the Blue Mountains. It was written by the retired former area ecologist just before his untimely death in 2007.

Common plants of the inland Pacific Northwest (1998) by Charles Grier Johnson. USDA Forest Service, Pacific Northwest Region, R6-NR-ECOL-TP-04-98, 394 pp. reprinted and digitized. This publication is sold under our cost-recovery agreement with the BLM and enjoys a steady demand from USFS personnel and the general public.

Plant associations of the Blue and Ochoco Mountains (1992) by Charles Grier Johnson and Rodrick R. Clausnitzer. USDA Forest Service R6-ERW-TP-036-92, 164 pp. reprinted and digitized. This is the workhorse plant classification guide for the Blue Mountains and continues to be widely used.



Ecologist Jenifer Ferriel (left) sampling a long-term monitoring transect with a member of the Malheur National Forest rangeland management staff. In FY07 we provided training and field assistance to local range managers to facilitate conversion of legacy (1960s-era) Parker 3-Step monitoring transects to accepted modern methods (the “Daubenmire” cover/frequency method and line-point intercept method).

Other:

Initiated and funded maintenance work by ranger district staff on long-term ecology monitoring exclosures on the Malheur NF: the Birch Cr 3-way exclosure was repaired, and materials were purchased for repair of 3 exclosures burned in the Egley Complex fire.

Completed final draft of the *Pannaria rubiginosa* (ISSSSP lichen) Conservation Assessment.

Supported Henderson Potential Natural Vegetation modeling/mapping of NE Oregon by vegzone verification of 1900 NE Oregon ecoplots using the database, ortho photos, field notes, and plot photos.

View of a monitoring transect in Cedar Grove Botanical Area, Malheur National forest. This is a spectacular, highly disjunct occurrence of the maritime tree species Alaska Yellow Cedar (*Cupressus nootkatensis*) on a moist site in the semiarid mixed conifer forest of eastern Oregon.

It was burned by a wildfire in 2006 and most adult trees were killed. Our monitoring is tracking survival and regeneration of the cedars and other plants in this truly unique community.




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Ecology monitoring home	Warm Dry Upland Forest PAG	View Data	References and sources of more information	Common and Latin Names of Plants
-----------------------------------------	------------------------------------------------	---------------------------	----------------------------------------------------------------	------------------------------------------------------

Douglas-fir/ninebark plant association - fire effects

click on the photo for a larger image	
	Pre-fire state. Pre-fire vegetation consisted of mixed-age stands of Douglas-fir or ponderosa pine or both. Douglas-fir was more common than ponderosa pine in the understory. Tree canopy cover was highly variable, ranging from no trees on one plot and two with just 10% cover up to about 65% tree cover. Burn severity was not related to the pre-fire tree canopy cover: we had moderate and severe fires in stands from the whole range of tree canopy cover. Under the trees was a lush shrub layer. Ninebark was the most abundant shrub, but snowberry and ocean spray were often common, and a few plots had substantial amounts of some other shrub, such as redstem ceanothus. The herb layer was fairly dense in spite of rather dense overstory. The most common plants were pinegrass, elk sedge, bigleaf sandwort, heartleaf arnica, strawberry, long-stalked clover, and side-flowered mitrewort.
	Moderate fire. Most understory vegetation was blackened or consumed, but upper foliage of mature trees remained green. Severe fire. All understory vegetation was consumed or blackened. Foliage of mature trees was consumed or damaged.
	Post-fire year 1: Tree mortality was variable on plots with burns rated as moderate. One plot (676) lost most of its tree overstory, while on another (749) it was largely intact. The third plot in this group (630) was treeless to start with. On plots with burns rated as severe, all trees died except for a few Douglas-firs in a less severely burned patch on one plot (951) and one isolated large Douglas-fir on plot 642. Shrubs (especially ninebark, snowberry, and spiraea) were beginning to resprout in year one, but cover was still considerably less than before the fire. Most pre-fire herbaceous species resprouted. Also notable was the increase or appearance of some annual or biennial post-fire opportunist plants such as miner's lettuce and prickly lettuce. Bare ground increased due to loss of moss and litter.
	Post-fire years 6 and 7: Shrubs continued to increase, reaching covers that approximated the pre-fire state on most plots. On a few severely burned plots the shrubs were flourishing well beyond pre-fire conditions, thanks to big increases in elderberry, redstem ceanothus, spiraea, or ninebark. The annual or biennial post-fire opportunist plants noted in year one had declined or disappeared, but the perennial plants noted prior to the fire had returned in amounts equal to or greater than before. Introduced grasses (red fescue, orchardgrass) were common on a few plots. On one plot (642) shrub resprouting was weak and the plot was still dominated by introduced orchardgrass and sweet-clover. Bare soil decreased as litter again covered the ground
	Post-fire year 11: Shrubs continued to thrive at height and cover similar to the pre-fire state. Two of the five plots with 11th year data had tree seedlings (ponderosa pine and Douglas-fir), both with just trace.
	Post-fire year 17. Our four samples from year 17 still showed little cover by tree seedlings and nearly continuous cover of shrubs 3 to 9 ft high. The exotic plants seeded on one plot (orchardgrass and sweet-clover) had declined to trace amounts from a canopy cover of about half in year one.
	The future. On plots where some overstory trees survived the fire, the tree canopy will gradually become more closed as seedlings grow and new ones become established in gaps. However, we expect that this process will be very slow and an open forest over dense shrubs will persist for many decades. On plots where trees were eliminated and seed sources are distant, tree regeneration will be very slow and a shrub thicket with few or no young trees may be present for many decades.

Internet

This is an example fire-effects web page from the Northeastern Oregon Ecology program's web site. It includes sequential photography from representative monitoring locations, narrative summaries of our monitoring data, and links to complete plant species lists and canopy cover data. In FY2007 we updated our summaries to cover 37 major vegetation groups spanning the full range of vegetation in the Blue Mountains; the above page represents one such group.

Central Oregon Area Ecology Program (Area 4) Deschutes, Ochoco, and Fremont-Winema National Forests In cooperation with Prineville and Lakeview BLM Districts

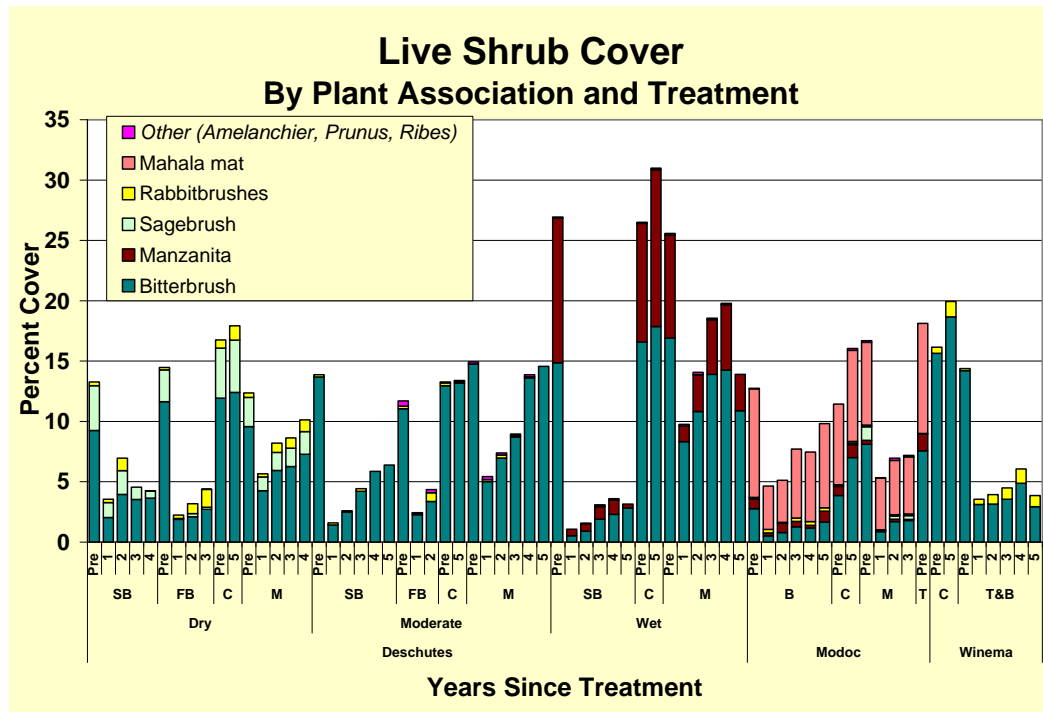
Team: Gregg Riegel, David Baker, Beth Johnson, Seth Ganzhorn, Sara Prueitt Lovtang, and Mike Simpson

Projects: (1-7 listed below)

1) Long Term Alternative Fuels Treatment Study

We continued working on several ongoing, long-term studies focusing on understory vegetation response to fuel treatments. These include comparing the effects of different prescription treatments such as mowing, burning, and thinning; various prescription burn return intervals; and post-wildfire salvage logging. In 2007 we remeasured a total of 55 plots on Deschutes NF, 4 plots on Modoc NF, 4 plots on Winema NF, and 12 plots on the Crooked River National Grasslands.

Since 2000 we have examined the effects of spring and fall burning, mowing, and thinning treatments in second growth ponderosa within five pine/bitterbrush plant associations on the Deschutes, Fremont-Winema, and Modoc National Forests. We currently have 60, 1-hectare plots. In 2007, 36 Alternative Fuels Treatment plots were measured; 4 plots on the Modoc NF, 4 plots on Winema NF, and 28 on the Deschutes NF.



Live shrub cover had the greatest decline with prescribed fire. Treatment-induced mortality on burned plots was approximately 75% as compared to the mow treatments where mortality was 35%. Wetter, more productive locations had a greater reduction in live shrub cover following the prescribed burns than drier locations due to fuel continuity.

2) Reintroducing Fire in Eastside Ponderosa Pine Forests

In 1992, the Area 4 Ecology Program began a study to examine effects of various fire return intervals on changes in overstory and understory composition, structure, and soil processes. Study areas are repeatedly burned in the fall at a 5, 10, and 20 year return intervals within old growth ponderosa pine in Metolius RNA. Three of the plots on the 10-year burn cycle are burned in the spring, and three in the fall. Measurements are made every two years; in June 2007 we conducted the 15th year remeasurement. This is a cooperative study with Research Forester Andy Youngblood, PNW Research Station, La Grande.



A. Control plot #22

B. 20-year interval burn plot # 13



C. 10-year interval burn plot #43

D. 5-year interval burn plot #21

As of 2007, bitterbrush cover on the control plot shown (A) was nearly 20%. This 20-year burn plot (B) was last treated in 1994. Live bitterbrush cover on this plot is currently about 9%, and snowbrush cover is about 15%, but other 20-year interval plots have similar bitterbrush cover with much less snowbrush. The 10-year fall burn treatment (C) had just over 1% live bitterbrush cover as it was last burned in 2003; and (D) 5 year interval plot was last burned in 2004 had a bitterbrush cover is currently about 3%. Longer intervals between reburns allows for greater plant density and cover development which produces higher intensity and more complete combustion resulting higher bitterbrush mortality.

3) FIREMON Beta Test Plots: Juniper/Mt. Big Sagebrush Rx Burn

In 2002, we installed twelve plots (40 x 60 m) on the southern slope of Gray Butte in the Crooked River National Grasslands as part of the Beta Test for FIREMON protocols. Currently the site is dominated by juniper/mt. big sagebrush 78-year-old junipers, with a mean density of 125 trees ha⁻¹, and canopy cover of 28%. The objective of the fuel treatment was to create additional grass dominated early seral stage, reduce understory establishment of regenerating juniper, and restore the dominant historic fire regime. The unit was burned on September 23, 2003; half of the plots burned and the other half left untreated.



This site (left photo) had low cheatgrass cover (<1%) prior to treatment in 2002, but following prescribed fire cover increased to over 25% as of 2007 (right photo). Many sites, however, have retained high relative cover and diversity of perennial grasses and forbs. Relative perennial forb cover has remained near 15%, and perennial grass cover has remained near 50%. Shrub cover (mostly mt. big sagebrush) decreased from over 10% to less than 1%. The prescribed fire reduced juniper cover by 11% (from 26 to 16%) but in the last four years has increased by 3% cover (19%).

Cheatgrass cover increased on all plots since 2002, but plots that were burned have much higher cover than those that were not. Plots at the higher elevations (4520 ft) within the study area appear to have increased perennial forb and grass diversity, and those at lower elevations (3530 ft) have larger patches of cheatgrass monocultures, especially under burned.

4) FRCC Klamath and Chiloquin Ranger Districts

Final draft of the Klamath RD report has not been completed. We continued to edit and refine Chiloquin RD FRCC maps and fire behavior analyses for using LANDFIRE fire behavior data. This is cooperative project with lead by Jane Kertis, Fire Ecologist NW Oregon Ecology Program, Sarah Malaby, Forest Botanist and GIS and Fuels Specialist Lois Shoemaker, Fremont-Winema NF, and Charley Martin, Fire Ecologist and Fire Behavior Analyst, Medford BLM District, and John Foster, TNC, Seattle.

5) Pringle Falls Experimental Forest RNA Monitoring

We remeasured three, 1.0, ha long term old growth ponderosa pine plots in the Pringle Falls RNA in the fall of 2007 establish by R.J. Morrow in 1982. All plots were measured in the spring of 2006 prior to burning in fall of 2006.

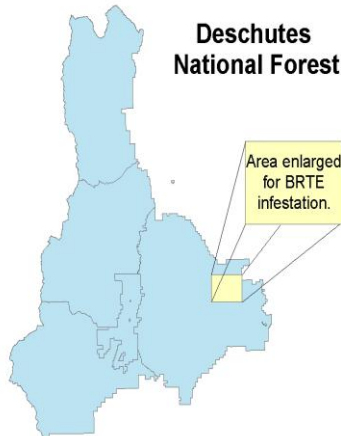
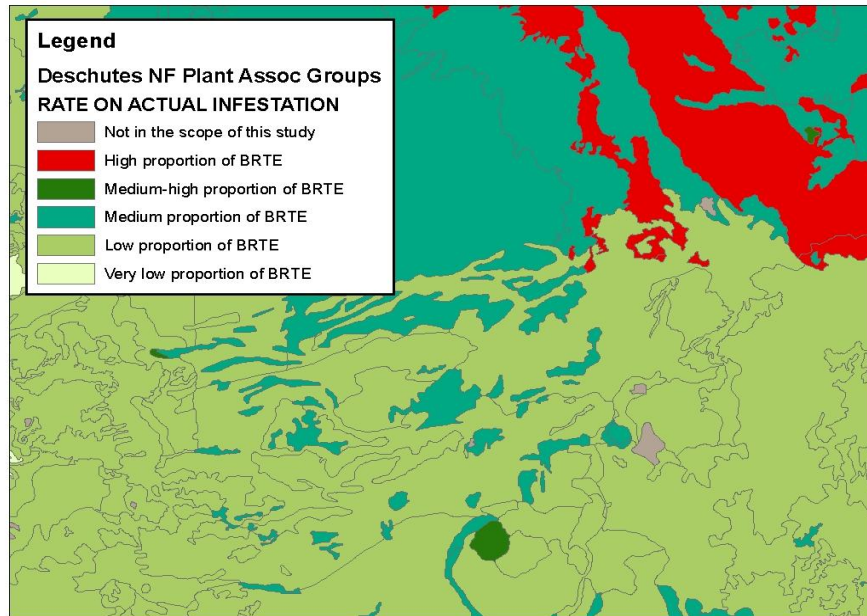


Sarah Greene, RNA Scientist (retired 29 Feb 2008), PNW Forestry Sciences Lab, Corvallis, and Rob Morrow, Asst. Fire Management Officer, Payette NF, Idaho, assess post-prescribed fire tree mortality in the Pringle Falls RNA, October 2008.

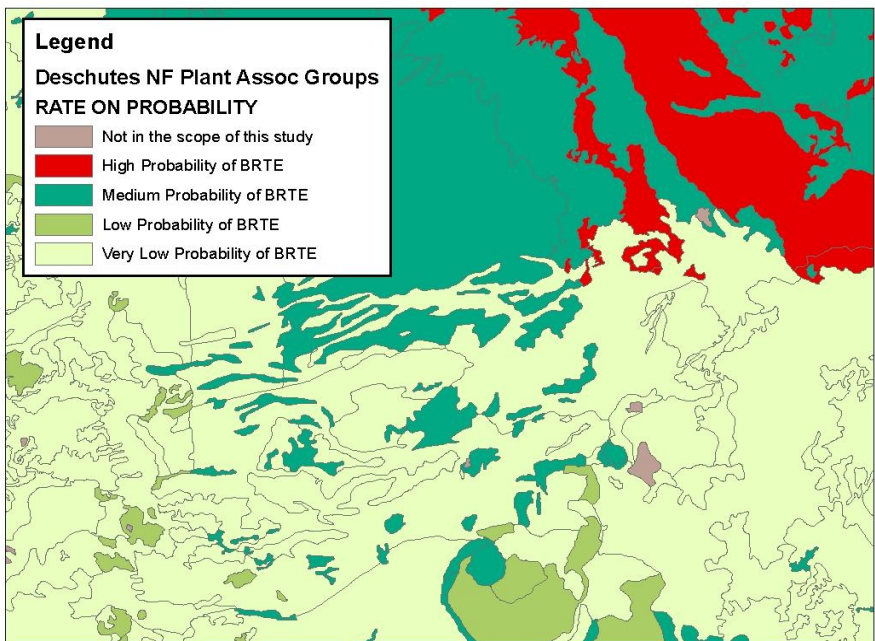
6) Effects of Fuel Treatment Alternatives on Invasive Weeds

The Forest Health Protection Program Invasive Plants Grant helped fund the development of a probability model to assist managers to plan and predict invasive plant species response to fuel treatments. Current Vegetation Survey data was used to create a logistic regression model to predict the probability of a cheatgrass (*BRTE=Bromus tectorum*) infestation in Central Oregon. Our model selection techniques chose the following variables as the best predictors of cheatgrass:

precipitation in inches + minimum January temperature – total trees (all species and size classes, per acre) + juniper (all size classes, per acre). A GIS layer and database link was developed that spatially depicts potential infestation sites.



The *probability* of infestation for each plant association group, and the *actual* infestation mapped on the Deschutes and Ochoco NFs.



7) Riparian Ecological Type Classification and Scorecard Guides

Outside contributors include: Dave Weixelman, PSW Regional Range Ecologist, Desi Zamudio, Soil Scientist, Fremont-Winema NF and Lakeview BLM, Karen Zamudio, Ecologist Fremont-Winema NF, Barbara Machado, District Hydrologist, Lakeview BLM.

Riparian ecosystems serve important functions in the larger landscape by providing fish and animal habitat, helping to maintain water quality in streams and rivers, and enhancing productivity of adjacent rangelands. However, most of the riparian ecosystems in central and south central Oregon have been affected by over a century of livestock grazing, logging, and fluvial channelization resulting in lower ecological condition.

We were asked to develop a classification for the Fremont (1995) and Ochoco (1997) National Forests and the Lakeview BLM (2000) that encompasses all conditions and has a scoring system to identify current status and establish permanent plots for long term monitoring. Our ecological type classification is driven by plant species composition, intensive examination of soil classification parameters, and hydraulic measurements. The classification and scorecards as well as appendices containing selected data together make up a field guide that can help resource managers and technicians assess and monitor conditions in riparian communities.

The field guide for south central Oregon was developed from 395 plots placed in the Fremont National Forest and Lakeview BLM. It is in the final draft stage prior to review and publication. It is currently being used for mapping and monitoring by both agencies.

The Lakeview BLM is using the guide to assess ecological type and condition of riparian areas in their watershed mapping project. They have contracted with Dr. John Ritter of Oregon Institute of Technology to develop an interactive database to automate the classification and scoring process from field data.

Fremont National Forest is using the guide for several assessments and monitoring programs: 1) Effectiveness Monitoring for the Programmatic Biological Opinion for Listed Suckers and Bull Trout., 2. Range Analysis, 3. Water Quality Implementation Plan Effectiveness Monitoring, 4. Forest Plan Monitoring Report.

A field guide has also been developed for the Ochoco National Forest using data from 268 plots. Similar to the Fremont guide, some ecological types and scoring attributes differ to the extent that landforms, soils and vegetative composition reflect environmental conditions unique to the Ochoco physiographic area. Analysis has been completed, and a working draft has been used by the Paulina Ranger District for assessing riparian areas under review in 2006's West Side Range Allotment Management Plan revision, and in the current South Side Range Allotment Management Plan revision.

Pending review and refinement of the plot and spatial data into a geodatabase, the data will also be available on the EcoShare website. Path to the databases can be provided upon request.

Consultation, Cooperation and Technology Transfer:

Oregon Rangeland Pilot: Washington Office Rangeland Management Program: 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 for the pilot. The goal of the “Oregon Rangeland Pilot” is to test the operational feasibility of an inventory of all private and public rangelands using NRI’s and FIA’s existing sampling designs. The secondary goal is the development of a data base, interpretive inventory, and for future monitoring reports addressing the extent and amount of range indicators. During the field season of 2007, Riegel worked as the liaison for the Washington Office Rangeland Management Program with Design Team members Jim Alegria (BLM and PNW FIA) and Paul Patterson (RMRS FIA) and FIA botanists, Darin Toone (RMRS), Martha “Missy” Voigt (PNWRS), and Sarah Butler (PNWRS) testing protocols on a variety of range and forest types.



Darin Toone, Rocky Mt. Research Station, Forest Inventory and Analysis (FIA), enters data from an *Artemisia longiloba* site, one of the 112 FIA plots measured during the Oregon Range Pilot. The 2007 field season for the "Pilot Crews" went from early April to late October.

National Riparian Technical Guide: This project began in spring of 2007. Riegel is one of eight national team members and represents the Pacific Northwest Region. 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.

TNC Fire Learning Network (FLN) Cooperators: Upper Deschutes Basin, Sprague River, and Lakeview Federal Sustained Yield Unit. Riegel and Simpson are Technical Team members assisting with VDDT model development and FRCC map review. Riegel represented the USFS at the National FLN meeting in Tucson in March 2007. Cooperators are Amy Waltz, the Fire Ecologist and Northwest FLN Leader.

COLA (Central Oregon Landscape Assessment) and IMAP (Interagency Mapping and Assessment Project) representative from Central Oregon: Collaborated with Jim Merzenich to develop VDDT models for Forested PVT's in the East Cascades Area. Cleaned up location data for Area 4 Ecology plots for use as inputs to Ecological Systems maps and to Model PVT's in Central Oregon. Built spatial dataset of soils info for input to PVT models on the Deschutes, Winema-Fremont, and surrounding lands. This set incorporates NRCS (SURGO) data where it occurs, USFS SRI data, and NRCS (STATSGO) where no other data occurs.

Spatial Risk Maps/Models developed for Mountain Pine Beetle in lodgepole pine: This collaboration project with Forest Health Protection Program (FHP) uses GNN (Gradient Nearest Neighbor) outputs from IMAP. Key findings are 1) local calibration of basic risk rules is important, 2) spatial mapping enables area specific Calibration, 3) a key variable needed is productivity (carrying capacity), and 3) Potential Vegetation Type shows promise as a surrogate for carrying capacity. Simpson

Landscape Analysis ArcGIS Toolbox: Developed to expand the Ochoco Viable Ecosystems protocols to the Deschutes and Fremont-Winmea NF's.

Potential Vegetation Modeling for Central Oregon: Used Jan Henderson's PNV model.

Assessment of Spotted Owl Habitat, Deschutes NF Using Known Nest Sites: Collaborated with USFWS and Deschutes NF Wildlife Biologists.

Pine Mountain Sage Grouse Habitat Study: Established vegetation assessment and monitoring plots, Bend RD, Deschutes NF and Prineville Dist. BLM.

Mule Deer Habitat Forest Plan Analysis Team: Forest Standard and Guidelines Review, Deschutes NF.

Fuel Treatment Decision Tree, Fuel Treatment and Restoration Issues, Cline Butte Wildland Urban Interface (WUI) Environmental Assessment, Prineville BLM and COFMS.

Fen and bog habitat search for rare bryophyte *Tritomaria exsectiformis*, Sweet Home RD, Willamette NF.

Fire monitoring technical assistance; plant identification and plot installation Glaze Meadow Fuels and Restoration Stewardship Glaze Meadow, Sisters RD, Deschutes NF and The Nature Conservancy.

Wetland delineation and fuel treatment operational issues; Glaze Meadow Fuels and Restoration Stewardship, Sisters RD, Deschutes NF.

Riparian ecological and livestock grazing assessment; Indian Ford Grazing Allotment, Sisters RD, Deschutes NF.

Wetland delineation and riparian boundaries; Snow Fuels Reduction Project, Snow Creek and Deschutes River, Bend- Ft. Rock, RD, Deschutes NF. Baker

Riparian plant community assessment, Ryan Ranch Meadow Restoration Project Deschutes River, Bend/Ft. Rock RD, Deschutes NF.

Lectures: Fire Ecology and Effects (Forestry 209), Central Oregon Community College; Spring Quarter (March-June), 3.0 unit class.

Lectures: Understory and Overstory Vegetation Responses to Prescribed Fire, Mowing and Thinning Central Oregon Forests. Central Oregon Intergovernmental Council Science and Stakeholders Meeting, May 10, 2007.

Trained and assisted Central Oregon Fire Management Services (COFMS) Fire Monitoring Program and TNC's AmeriCorp Crews.

Modoc High School, Natural Resources Academy, Alturas, CA.

Lead Cadre Instructor, Fire Ecology and Fuel Treatment Alternatives in Ponderosa Pine and Mixed Conifer Forest, Institute for Journalism and Natural Resources, September 22, 2007.

Busse, M., G. Riegel, and W. Johnson. 2006 Long-term effects of prescribed fire and thinning in central Oregon ponderosa pine forests. Oral Presentation. International Fire Ecology Congress, San Diego, CA. Nov. 13-17, 2006.

Busse, M., and G. Riegel. 2006. Response of antelope bitterbrush to repeated prescribed burning in central Oregon ponderosa pine forests. Poster. 3rd International Fire Ecology Congress, San Diego, CA. Nov. 13-17, 2006.

Marc Coles-Ritchie, Gregg Riegel, and Dave Weixelman. Abundance of non-native and noxious plant species in riparian areas of the Western US. 2007 Annual Meeting of the

Ecological Society of America and the Society for Ecological Restoration, August 10, 2007, San Jose, CA.

Shovlain, A.M., D.H. Olson, W.J. Ripple, and G.M. Riegel. Grazing Effects on Oregon Spotted Frog (*Rana pretiosa*) Habitat Use and Vegetation at Jack Creek, Oregon. *J. of Herpetology*. In Press.

Simpson, M. Forested Plant Association Guide of the Oregon East Cascades. USDA Forest Pacific Northwest Region. In Press.

Busse, M.D., P.H. Cochran, W. E. Hopkins, W. Johnson, G.O. Fiddler, G.M. Riegel, A.W. Ratcliff, and C.J. Shestak. Is mechanical thinning an ecological surrogate for fire in ponderosa pine forests? (to be submitted to *Forest Ecology and Management*)

Busse, M.D., and G.M. Riegel. Response of Antelope Bitterbrush to Repeated Prescribed Burning in Central Oregon Ponderosa Pine Forests. (to be submitted to *Ecological Applications*).

Oregon State University Graduate Committee Member, Current Students:

Wiseman, J. Riparian Site Capability in terms of woody riparian species along streams in Northeast Oregon. M.S. Dept. of Range Ecol. and Manage. OSU. Expected completion March, 2008.

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

Sabin, B. Estimating Western Juniper Biomass for Potential Co-Generation Utilization. M.S. Dept. of Forest Resources, OSU. Expected completion June, 2008. Co Major Professor.

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, September 2009. Co Major Professor

**Southwest Oregon Area Ecology Program (Area 5)
Rogue River-Siskiyou and Umpqua National Forests
In cooperation with Roseburg, Coos Bay, and Medford BLM Districts**

**Team: Tom Sensenig, Diane White, Pat Martinez, Charley Martin,
Ed Reilly, and Frank Price**

Projects: (1-6 numbered below)

1) LANDFIRE:

Ecology staff became Certified LANDFIRE FOR-438: Integrated Fuels Planning, Spokane, Washington, March 2007.

2) Ecological Classification:

Prepared Plant Association Groups (PAG) analyses for Western Hemlock, Douglas-fir, and white fir PAG's.

Prepared dichotomous keys for the White fir, Douglas-fir, and western hemlock plant association groups with Northwest Oregon Ecology Group.

3) Provide ongoing assistance and collaboration with the Rogue River – Siskiyou National Forest, Assistant Forest Silviculturist in the development of a high-resolution existing/current vegetation map.

4) The southwest Oregon ecology group worked with the ecologists from the Northwest Washington ecology program to refine the ecological parameters that influence and define the range of variation and species composition of southwest Oregon forest types.

5) IMAP:

Working with ecologists in NW Oregon, developed vegetation groups for western Oregon to be modeled by the ongoing Vegetation Development Dynamic Tool analysis. Participation in ongoing IMAP working group that identifies important issues applicable to SW Oregon. Initiated western hemlock models for VDDT for IMAP.

6) 2007 Joint Fire Science and Research:

The SW Oregon Ecology Program conducted a field review and prepared the study plan for the Biscuit post fire research project. This four year research effort is in cooperation with Pacific Northwest Research Station to develop landscape scale operational tools for managing burned landscapes in southwest Oregon. In 2007 the

forest contributed to the LIDAR imagery to be incorporated into the long-term monitoring of the project.

Consultation, Cooperation and Technology Transfer

Lecture: Instructor, Forest Biology FOR240, Diane White, Oregon State University, spring quarter 2006 and fall quarter 2007.

Participant- Interagency team (BLM - USFS) to analyze and recommend non-forest and woodland restoration fuels reduction prescriptions. The team also developed vegetation development dynamic (VDDT) for oak woodland prescriptions for southwest Oregon.



Oak Woodland Field Team, from left to right: Tom Sensenig FS, Dave Hockman-Wert USGS, Tom Atzet Ecologist, Darren Borgias TNC, Paul Hosten BLM, Ed Reilly BLM.



Photo: Ecologists Jan Henderson and Tom Sensenig exploring tanoak forests in southwestern Oregon.

Participated in private and interagency, Alternative Energy and Fuels Reduction workshop. Presentations and field sessions to explore utilization of fuels generated by fuel reduction treatments, for bio-fuel, cogeneration, and alternative energy.

Ecology Program provides ongoing technical and statistical support to both the Port-Orford Cedar and Insect and Disease programs.

Ecology Program is a cooperating member and provides ecological support for the interagency Applegate Adaptive Management Area and the Applegate Partnership. Participated in, and conducted numerous public and agency field trips on various ecological issues in the Applegate Watershed Adaptive Management Area.

Finalized the Southwestern Oregon Interagency Biomass Utilization Strategy, Rogue River - Siskiyou NF and Medford District, Bureau of Land Management, 2007.

Contributed to Supplemental Survey and Manage SEIS and FSEIS EIS to Remove or Modify the Survey and Management Mitigation Measures Standards and Guidelines, 2007.

Presented paper “Comparison of Downed Wood, Litter and, Moss Characteristics Pre and Post Biscuit and Tiller Complex Fires”, Diane White. Ecological Society of America Conference in San Jose, CA, 2007.

Presented “Ecological Restoration of Fire Adapted Ecosystems”, Tom Sensenig, Oregon State University, March 2007.

Prepared “Pine Health in the Ashland Research Natural Area”. Donald J. Goheen, Katy M. Mallams, and Diane E. White. In preparation, to be submitted to the Natural Areas Journal, 2008.

Conducted literature reviews, comments, documents and testimony for the two remaining 2007, Biscuit post-fire management litigation and lawsuits.

Assisted the BLM in ecological and fire related issues for the development and preparation of the Western Oregon Plan Revision, 2007.

Co-operators with Oregon State University “Re-burn severity in managed and unmanaged vegetation in a large wildfire” Thompson et al., Proceedings of the National Academy of Sciences.

Co-operators with Oregon State University “Post-fire tree regeneration in SW Oregon: duration and spatial variability” Journal of Forestry, 2007 Shatford et al.

Ongoing Southwest Oregon Ecology Program, Overview

Ecology is a diverse program that collects, manages, and analyzes the Forest’s ecological data, conducts studies, provides technical support, and provides training and ecological presentations

Conducts literature reviews, comments, and testimony for litigation

Referees and peer reviewers for research for professional journals

Participates with the interagency Applegate Adaptive Management Area

Participant /contributor, Southwest Oregon LANDFIRE and FRCC

Analyze and prepare Plant Association Classifications for SWO

Prepares analyses in support of regional VDDT and IMAP efforts

Provides consultation on Forest projects throughout SWO

Provides educational outreach by providing ecological presentations, training, and participation in conferences and workshops.

**Northwest Oregon Area Ecology Program (Area 6)
Siuslaw, Willamette, and Mt. Hood 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 Wogen, Barbara Raible, Hugh Snook, Linda Geiser, Nancy Lankford, and Cheryl Ann Friesen

Projects: (1-15 numbered below)

1) Huckleberries Restoration/Monitoring (MTH, WIL & GIP NFs, CTWS):

A declining resource and increasing concern for the tribes, huckleberries are gaining attention as illustrated by the recent Walden/Blumenauer legislative proposal. Huckleberries are a 'first food' and have tremendous spiritual and cultural importance to the tribes. Under the Treaty of 1855, the federal government has trust responsibilities "to protect treaty-based fishing, hunting, gathering and similar access and resource use on traditional tribal lands" and the tribes have shared rights on usual and accustomed sites on public lands. The objective of this project is to bring together the most current knowledge of huckleberry management and provide a future workshop for managers to assist them in implementing restoration projects. 2007 Accomplishments:

- Monitoring on Salmonberry thin unit to study response of huckleberry after a thinning treatment
- Met with the Confederated Tribes of Warm Springs to prepare for a 2008 workshop that addresses restoration of the huckleberry resource using a healthy watershed approach. Meetings included field trips to sites on tribal as well as Forest Service project sites with emphasis on huckleberry restoration.

2) Sustainability (MTH NF, PSU):

The priorities for the implementation of the sustainability monitoring program are to explore applications of criteria and indicators at the Forest level to provide tools for

resource managers in monitoring, to prepare the Forest for plan revision, to refine the LUCID criteria and indicators, improve accessibility of local data, and explore linkages between local level, state and national level efforts to contribute to better understanding of national trends. From FY03 to 07, the focus was on completion of two projects: the transition of the Forest Plan monitoring report to a systems-based approach and the Olallie Protocol and General Technical Report. In addition, the team participated in various other sustainability efforts including the Roundtable on Sustainable Forests' refinement of ecological criteria and indicators, the Western Regional Workshop on Sustainable Forests on sustainability management applications, contributed to the State of Oregon's Forestry Program in the selection of sustainability criteria and indicators, completed a management thesis "Monitoring Sustainable Recreational Use in the Olallie Lakes Watershed, and contributed to a journal publication/peer review on social indicators. 2007 Accomplishments:

- Completed the rewrite and review of the 2006 Mt Hood Forest Plan Monitoring Report incorporating sustainability concept
- Completed white paper on transitioning the Forest Plan Monitoring Report

3) Oak/Pine Historic and Existing Vegetation Mapping in northwest Oregon (NFWF, TNC, WIL & MTH NF, Eugene & Salem BLM, CRGNSA, NWHD):

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 is 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 has extended to the Mt Hood NF and CRGNSA in 2006. 2007 Accomplishments:

- 4 digital orthoquads for existing conditions were reviewed and finalized.

4) NW Oregon Fire Regime Condition Class Mapping Effort (NW Oregon):

An interagency, standardized tool, the Fire Regime Condition Class (FRCC) methodology, was developed to describe the degree to which vegetation condition and structure, fire frequency and severity depart from natural or historical ecological reference conditions. Assessing FRCC can help managers to gain a landscape perspective of conditions, evaluate risk to ecosystem sustainability, develop a long-term strategy to improve condition class, assess management implications, and

provides managers a framework for prioritization of treatment areas. Current and historical vegetation conditions are essential for planning, implementing, and monitoring projects supported by the National Fire Plan (2000) and the Healthy Forest Restoration Act of 2003. Under the Healthy Forest Restoration Act, FRCC is required to be assessed every five years.

In 2006, an analysis and mapping of conditions in northwest Oregon was completed using the FRCC protocol. The analysis project area covered the Mt Hood, Willamette, Siuslaw, and portions of the Umpqua National Forests and the Coast Range, Willamette Valley, Cascade west and a portion of Cascade east physiographic. In 2007, the documentation, maps and coverage was made available online at www.reo.gov/ecoshare.

5) White Bark Pine Inventory (MTH, GIP & WIL NFs, regional and CTWS):

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 beetle and encroachment. There is a need to quantify the status of the Pacific coast WBP and determine the need for a conservation management plan and for restoration opportunities. Extensive surveys, analysis of survey data and mapping of current distribution of white bark pine populations have been completed for the Willamette, Gifford Pinchot, and Mt Hood NFs. Support towards the regional effort to provide a regional summary report of health assessments, species range map, survey protocol, genetic assessment, conservation strategy and restoration plans have been provided since 2004 and will continue through 2008. Cone collections on the Mt Hood NF and Warm Springs reservation have been done in 2003 and 2006.

6) Successional Pathways/IMAP (NW Oregon):

This project describes the range of current stand conditions (structure and composition) and common trajectories through time of forests across northwest Oregon. In FY07, we organized and formatted our data for analysis and for comparison of our cluster classification to IMAP VDDT models. In FY08, we will be developing the VDDT models for NW Oregon vegetation types. This information will feed into various efforts underway, such as Forest Plan Revision, Interagency Mapping and Assessment Process (IMAP) and project plans, NEPA and silvicultural prescription documents. This information has already been used to refine the trajectory models for the pilot IMAP project in the Central Oregon Landscape Area (COLA).

7) Deadwood Assessment (NW Oregon):

In 2007, efforts began to complete an initial NW Oregon snag and down wood level assessment. Using DecAID information localized to the plant sub-series level as the reference condition and Janet Ohmann's Gradient Nearest Neighbor (GNN) data for

existing conditions, GIS grids and 5th field watershed level summaries will be developed for NW Oregon and provided to the Forests. Forests can then use the data to complete forest level inventory distribution assessments to understand current conditions of deadwood on the forest, provide a landscape context to project level planning and management activities, and . In 2008, expect to complete mapping for NW Oregon and support initial assessment for the Mt Hood NF.

Partial list of other projects:

- 8) IDTs including special forest products (Siu),
- 9) Jims Creek oak restoration/timber sale (Will),
- 10) Salmon River Estuary restoration projects (Siu),
- 11) Research Natural Area monitoring (Siu and Will),
- 12) Estuarine plant community grant cooperator (Siu),
- 13) Invasive species working groups (Siu and Will),
- 14) Forest Openings Information Sharing meeting,
- 15) Ecology core stand structure data.

Program Goals for 2008 and beyond:

The huckleberry workshop is scheduled for June 2008 at Kah-nee-ta, Oregon. In 2008, we also expect to continue monitoring the Salmonberry site, continue communications and collaboration with the Confederated Tribes of Warm Springs with a goal share current knowledge and science on the sustainability of this resource, and develop a huckleberry management plan consistent with the established MOU.

In 2008, expect to have the General Technical Report for the implementation of the sustainability monitoring program published, continue participation in the Roundtable on Sustainable Forests' refinement of criteria and indicators, and continue work on the 2007 forest plan monitoring report incorporating sustainability concepts.

In 2008, additional areas on the eastside of Mt Hood NF and CRGNSA will be mapped for the Oak/Pine project. With personnel changes, a second presentation of the mapping effort was presented to the Mt Hood wildlife biologists and silviculturists. A white paper will be completed documenting mapping effort and use.

Additional work on NW Oregon Fire Regime Condition Class mapping effort is needed to develop protocols for Forests to update the mapping effort from field verification as

well as develop FRCC implementation training to assist field managers on use of FRCC products.

In 2008, efforts will continue on completing conservation guidelines and identifying restoration opportunities for the whitebark pine populations on the Mt Hood, Gifford Pinchot and Willamette NFs including a photo essay, continue coordination and support to the regional effort in developing a conservation strategy for the region and contributing to a genetic assessment of whitebark pine populations such as the genetic assessment. In addition, seek funding to design an interpretive program that would raise the awareness of whitebark pine in key recreation destinations.

Accomplishments at the Pacific Northwest Regional Office

Team: Tom DeMeo, Regina Winkler (left in 2008), Mary Anne Sanford (joined in 2008). In cooperation with Jim Alegria (inventory), Louisa Evers (fire ecology), Kim Mellen-McLean (wildlife ecology), Michael Golden (remote sensing), Melinda Moeur (monitoring), and others

Administration:

Secured a \$1.46 million program budget for the regional ecology program, all of which was distributed to the Forests. An additional \$220,000 was obtained for ecologists working on existing vegetation mapping and modeling (IMAP).

Met by conference call with Forest staff officers for annual review of ecology program of work. I am also in contact with them on a regular basis.

Provided leadership and mentoring for 6 area ecology programs in the Region with a total of 25 ecologists

At the end of the fiscal year, began coordinating the Natural Resource Information System (NRIS) data management effort in the Region.

Began an initiative to recruit SCEP (student) ecologists into the program. This came to fruition in FY08 with recruitment of a SCEP ecologist to be posted on the Malheur National Forest.

NEPA Support:

Provided assistance for the responses to public comments on the supplemental EIS (SEIS) for the Northwest Plan. Along with Tom Sensenig of the Southwest Oregon Ecology Program, received a cash award for the overall 2006-2007 work on the SEIS.

Participated in Rapid Assessment Team post-fire review at the Mt. Hood National Forest office in October 2006.

Technology Transfer:

NIFTT:

Serve as a standing member of the National Interagency Fuels Technology Transfer (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 (Total Fire Management, Bothell, WA, October 2007).

Provided an FRCC module for the Total Fire Management training, Bothell WA, May 2007.

Prepared the FRCC portion for a NIFTT Forestry 438 (LANDFIRE tools) training in Shepherdstown, WV.

Presentations:

“Refining Fire Regime Condition Class Assessments.” Third International Fire Ecology and Management Congress, San Diego November 2006.

Presentation on IMAP to the fisher management group, January 2007.

Presentation to Regional ecologists on the range handbook revision, February 2007

Editing:

Provided some fire ecology edits and Ecoclass code correlation for Mike Simpson’s *Forested Plant Associations of the Oregon East Cascades*.

Trainings Taken:

RX-310, Fire Effects, Redmond, February 2007

Potential natural vegetation (PNV) modeling, Bend, May 2007

Planned Work for FY08:

Write IMAP technical handbook, on detail to Pacific Northwest Station

Set up program to complete PNV work in the Region by the end of FY09

Continue to maintain and refine IMAP potential vegetation crosswalks

Develop and implement the tech transfer part of IMAP

Partnerships:

IMAP coalition (USDA Forest Service Pacific Northwest (PNW) Research Station, Oregon Department of Forestry, Bureau of Land Management, The Nature Conservancy)

Oregon Heritage Program on PNV classification and Research Natural Areas

PNW Station on Research Natural Areas establishment

Through the fuels tech transfer work with NIFTT, we are an interagency paper with all Federal agencies dealing with fuels management

BLM partner through our fire monitoring work and administration of the ecology program.

Partnership with USGS, BLM, and NRCS through our implementation of range monitoring

For more on the ecology program effort...

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.