USDA Forest Service
Pacific Northwest Region
Ecology Program

Accomplishments for Fiscal Year 2010
(October 2009-September 2010)

Annual Report

USDA Forest Service
Pacific Northwest Region
Ecology Program

USDA Forest Service
Pacific Northwest Region
333 SW First Avenue
Portland, Oregon 97204-3440

Contact:
Tom DeMeo, Regional Ecologist
e-mail: tdemeo@fs.fed.us
website: http://ecoshare.info

Cover photo credit: Elk River on the Powers Ranger District, Rogue River-Siskiyou NF, taken by Tom Sensenig

Table of Contents:

Table of Contents 1
Ecology Program Purpose 2
Ecology Program objectives 2
About the program 2
Western Washington Area Ecology Program 3
Eastern Washington Area Ecology Program 10
Northeastern Oregon Area Ecology Program 18
Central Oregon Area Ecology Program 26
Southwest Oregon Area Ecology Program 39
Northwest Oregon Area Ecology Program 46
Pacific Northwest Regional Office 52

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 Regional Ecology Program is organized into six areas: 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 Regional Ecology Program staff meet at least annually to discuss programs of work, funding, standards and guidelines, future planning, and topics of current interest. The Ecology Program provides products and expertise to support state-of-the-art science-based, multiple-use natural resource management in the Pacific Northwest.

Visit us at our new site at http://ecoshare.info/ (or Google "ecoshare."). Ecoshare provides information on the environment, ecology, and natural resources. We include publications, data sets, code sets, GIS data, and plant photography to a wide audience. Our spirit is interdisciplinary and interagency. All materials presented here are in the public domain. 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 Region Six 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, Robin Shoal, and Jessica Hudec

Projects

1) Potential Natural Vegetation (PNV) Manuscript

   A manuscript titled *"A landscape model for predicting potential natural vegetation of the Olympic Peninsula USA using boundary equations and newly development environmental variables"* by J.A. Henderson, R.D. Lesher, D.H. Peter and C.D. Ringo was submitted to the PNW Station for publication as a General Technical Report. The manuscript was approved for publication and should be available Spring 2011. This publication documents the methodology used to predict and map potential vegetation in Region 6, as well as presenting newly developed environmental variables used in the PNV model.

2) Ecology Program Corporate Database for the Mt. Baker-Snoqualmie National Forest.

   This network of ecology plots and data represent 30 years of field work and is a unique and valuable resource for a national forest landscape. The Ecology Corporate Database version 1 is a Microsoft Access application with a front-end interface that provides built-in queries for location of plots, target species and vegetation type, and includes functions for viewing, display and exporting data. The Ecology Corporate Database version 1 includes data on plot location, environment and site conditions, stand age, plant community composition and vascular plant species abundance. This application provides Ecology Program data for use by Forest personnel, with a user-friendly interface to view and query the data.

3) Ecology and Distribution of Western Redcedar and Alaska Yellowcedar in northwestern Washington.

   Analysis and interpretation of the ecology and distribution of western redcedar (*Thuja plicata*) and Alaska yellowcedar (*Chamaecyparis nootkatensis*) was conducted for northwestern Washington with an emphasis on the MBS. This was accomplished in response to an invitation to present this information at an international symposium on redcedar and yellowcedar held in Victoria BC in May 2010. Lesher presented the talk to the conference via remote phone connection, and the manuscript is published in the conference proceedings: Harrington, C.A. tech. coord. 2010. A Tale of Two Cedars: International symposium on western redcedar and yellow-cedar. General Technical Report PNW-GTR-828. Portland, OR: USDA Forest Service, Pacific Northwest Research Station. 177 p.

This analysis of cedars is the initial stage in developing a species habitat model, and supports the recommendations in the Tulalip Tribes-Forest Service Memorandum of Agreement.

4) Western Washington Plant Association Groups (PAGs)

The Plant Association Group classification was revised for western Washington. The PAG lookup table and map were revised for the Western Hemlock Zone (WHZ) and Pacific Silver Fir Zone (PSFZ), improving model and map accuracy. Plot data were assembled and edited for the MBS, Olympic and Gifford Pinchot National Forests for the WHZ and PSFZ. We conducted analyses of PAGs and their environments, and initiated a draft manuscript.

5) Monitoring the results of commercial thinning in the Western Hemlock/Swordfern-Salal Plant Association Group

Preliminary work on this project included analysis on stand volume and growth, mortality, understory species composition and abundance, literature review, and developing an outline for a manuscript. Significant results from the Hey Thin monitoring are the heavy tree regeneration following thinning treatment and significant blowdown of the remaining stand.

Consultation:

1) Olympic National Forest Cedar Theft Case

Assisted LEO Special Agent Anne Minden and Assistant U.S. Attorney Jim Oesterle in restitution hearing in the U.S. District Court for Olympic National Forest Cook Creek Cedar Theft case. Henderson testified as expert witness and Lesher provided technical support. Based on Henderson's testimony and documentation, the U.S. District Court judge acknowledged the ecological value of the damaged trees and imposed a restitution award of $334,000. This ruling was appealed and upheld in the 9th Circuit Court of Appeals.

2) Member of Cedar-Huckleberry Technical Committee.

Lesher was member of committee that completed recommendations for implementation of the Tulalip Tribes-Forest Service Memorandum of Agreement. Provided expertise and data in response to information requests from the Tulalip Tribes on species and ecology. Provided distribution map of Alaska Yellow-cedar on MBS ecology plots by diameter size classes.

3) Verlot Public Service Center Interpretative Project

Henderson provided natural history write-up and review for interpretative project.

4) Field review of study site and prescription for silvicultural certification

5) Field review of forest plan implementation monitoring for Forgotten Thin

6) Data Requests

   - MBS National Forest: requests from botanist, wildlife biologist, silviculturists for ecology plot data and expertise, including TES species in the project planning areas, ecology plots with snowshoe hare observations on Skykomish District, species list for native plant restoration.

   - Olympic National Forest: Several requests from botanist, ecologist, wildlife biologist and geneticist for ecology plot data on tree species distributions, non-forest balds, dead and down wood data for South Fork Skokomish DecAid project, cedar theft cases and assessment of ecological value, species distribution questions related to climate change projects.

7) Survey and Manage Lawsuit

   Henderson responded to request from Regional Office to develop map of dry Douglas-fir, white fir and grand fir PAGS for the Northwest Forest Plan area (including northern California) to evaluate exemption of areas from pre-project surveys as part of negotiation settlement with plaintiffs

8) PAG maps and data provided in support of

   - Riparian Monitoring Team for the Northwest Forest Plan

   - PNW Station Elk forage habitat study

   - Region 6 Existing vegetation mapping and modeling project

9) Provided plot data for Alaska yellowcedar to research scientist at PNW Research Station in Olympia to be used for developing growth models for yellowcedar.

10) Tree distribution data for regional forest health monitoring project

11) Site visit and consultation for nurse log "Vivarium" exhibit at Seattle Art Museum Olympic Sculpture Park. Henderson and Lesher have been involved with this project since inception, and have provided ecological expertise for implementation and maintenance of this exhibit.

12) University of Washington researchers and graduate students regarding climate change, biological diversity, fire and disturbance history

13) Ecological assessment for timber theft cases

14) Subalpine old-growth forest definition

Cooperation and Technology Transfer

Presentations

1) Henderson gave two presentations on climate change and effects on vegetation and disturbance history.

   - November 2009: "*Climate change and vegetation history*". Presentation at Regional Ecology meeting.

   - December 2009: "*Fire History and Vegetation Ecology of Northwestern Washington*" sponsored by the MBS Fire Organization. Over 40 people attended from the MBS, PNW lab, University of Washington, Stillaguamish Tribe, and other members of the public

2) December 2009: Henderson presented "*PNV mapping and modeling project*". Discussion on the development and description of climatic and environmental variables that influence vegetation, and how this information may be used for addressing questions of interest to the fire community such as fire regimes, landscape analysis for fire, and fuels modeling.

3) May 2010. Lesher (remotely) presented paper on the *"Ecology and distribution of Redcedar and Yellowcedar in Northwestern Washington"* to the International Symposium: A tale of Two Cedars: western redcedar and yellow-cedar in Victoria BC.

4) Presentations given to cooperative groups on Fire Regime Condition Class mapping.

5) Poster presented on Master's thesis work at the International Association of Wildland.

6) Fire 3rd Fire Behavior and Fuels Conference- Spokane, WA.

7) Fire ecology lessons presented to Natural Resources Management class at Green River Community College- Auburn, WA.

Publications

8) Henderson, J.A., R.D. Lesher, D.H. Peter and C.D. Ringo (in press). A landscape model for predicting potential natural vegetation of the Olympic Peninsula USA using boundary equations and newly development environmental variables. General Technical Report PNW-GTR-xxx. Portland, OR: USDA Forest Service, Pacific Northwest Research Station.

9) Lesher, R. D. and J.A. Henderson. 2010. Ecology and Distribution of Western Redcedar and Alaska Yellowcedar in northwestern Washington. In: Harrington, C.A. tech. coord. 2010. A Tale of Two Cedars: International symposium on western redcedar and yellow-cedar. General Technical Report PNW-GTR-828. Portland, OR: USDA Forest Service, Pacific Northwest Research Station. 177 p.

Administration and Personnel

1) 2010 marked the end of an era with the retirement of long-term Area Ecologist Jan Henderson in July, after 31 years of service with the Ecology Program. Henderson has been a leader in vegetation classification and landscape modeling work for the region. His vision for establishing and monitoring permanent plots provide a valuable legacy to current and future generations, and an important resource to be able to document changes in stand conditions over time, and in response to treatments. His in-depth knowledge of the landscape and ecology of northwestern Washington was transferred to managers and resource specialists and helped change the way they saw the landscape and managed the land. Throughout his career, Henderson mentored many young professionals; many went on to get advanced degrees and pursue careers in ecology and resource management.

2) Henderson continues to work in ecology as a volunteer for the Regional Office. Henderson contributed 18 volunteer days in 2010, with work on the PNV and cedar manuscripts, and the ecology database.

3) Robin Shoal came on board with the Western Washington Area Ecology Group in October 2010. She is based on the Olympic National Forest. Shoal received her Master's in Environmental Studies from the Evergreen State College. She has spent several years working on whitebark pine surveys across Region 6 and on the R6 whitebark pine restoration strategy, among other things. She also manages the Olympic's Native Plant Materials and Restoration program. Shoal's emphasis for FY 2011 will be to identify Ecology needs and initiate forest-level projects on the Olympic NF. In October 2010, Shoal met with Natural Resources Staff to define the Ecology program of work for FY 2011. High-priority projects that will be initiated in FY 2011 include an inventory of wetlands and assessment of wetland function and condition; an inventory and assessment of balds and native grassland habitats; reinvigorating a prairie restoration project; and assisting with the development of a western white pine restoration strategy for the forest. Shoal will work closely with NR Staff, Botanists, and Biologists to develop and implement these projects. Topics identified for FY 2012 include an emphasis on the forest's RNAs and Botanical Areas; endemic plant and animal species; and pollinators and pollinator habitats.

4) Jessica Hudec serves as fire ecologist on the Gifford Pinchot National Forest. During FY10 she made additional progress in completing her master’s program at the University of Washington, under the direction of major professor Dave Peterson (also a PNW Station scientist).

Her thesis, on post-burn fire hazard in mixed severity fire regimes in the Cascade Range, will be of direct benefit to the Gifford Pinchot and may have implications for the broader area of the east Cascades. The study focuses on post-burn site characteristics in low elevation mixed conifer ecosystems dominated by ponderosa pine, Douglas-fir, and grand fir. Fires in these mixed conifer ecosystems vary widely in frequency and severity. Three fires that burned on the near east side of the Cascade Range between 2007 and 2008 were stratified by fire severity, and vegetation and fuels were sampled at 60, 0.04-hectare plots within the perimeter of each fire. The Fuels Characteristic Classification System (FCCS) (Sandberg et al. 2007) will be used to convert the structure and composition characteristics into an estimate of potential fire behavior and fire hazard. Understanding the variability in fuels and vegetation is important for management practices including the classification of high-risk areas, the assessment of re-burn potential, and the identification of fuel breaks. Identifying potential relationships between fire severity and post burn fire hazard will help identify areas where changes in forest structure and composition are likely to threaten key ecosystem components. Knowledge of the relationship between fire severity and post burn fire hazard, supported by empirical data on ecosystem variability, will guide land managers to meet fire and fuels management objectives in mixed severity fire regimes.

The three fire areas sampled (total 180 plots), were:

- GW Fire (2008)- Deschutes National Forest
- Ball Point Fire (2007)- Mt. Hood National Forest
- Cold Springs Fire (2008)- Gifford Pinchot National Forest

Cooperation and support for her study are provided by the University of Washington School of Forest Resources, the Forest Service Pacific Wildland Fire Sciences Lab, and the Forest Service Pacific Northwest Research Station. Jessica receives partial salary support from the Ecology Program.

Western Washington Area Ecology Program Goals FY2011 and beyond:

1) Provide training to forest personnel on Ecology Program Corporate Database.

2) Continue development of corporate ecology database.

3) Monitoring Plots (thinning treatments, Silver Fir Spacing Trials and permanent benchmark plots).

4) Big Huckleberry habitat model (Tulalip MOA).

5) Analysis for a non-forest vegetation classification.

6) Analysis to develop restoration guidelines for old-growth forests in context of the Finney Adaptive Management Area and future Late-Successional Reserve treatments.

7) Work on manuscripts for thinning response, PAGs of Western Washington, species habitat models.

8) Harlan Creek Restoration project in conjunction with Tulalip Tribes.

9) Special Forest Products and Sustainability.

10) Forest consultation and other projects.

11) Completion of Jessica Hudec's master's thesis and associated publication.

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

Vegetation Ecology Projects

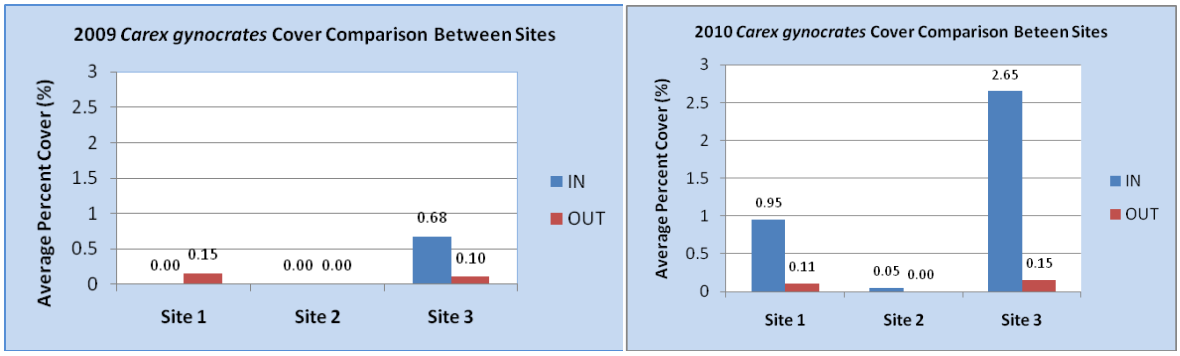
The Area 2 Ecology Program was involved in several projects to support area-wide monitoring priorities. One of the projects was monitoring the fen meadows and *Carex gynocrates* in upper Falls Creek on the Methow Valley Ranger District (MVRD). We also supported PacFish-InFish Biological Opinion (PIBO) monitoring of five stream corridors on the Methow Valley Ranger District. In addition, seven range condition and trend clusters (C&T) were re-established and monitored on the Tonasket Ranger District (TRD). Finally, area ecology personnel supported portions of the analyses and development for the Draft Okanogan-Wenatchee National Forest Travel Management Plan Environmental Impact Statement (EIS).

1) Upper Falls Creek Fen and *Carex gynocrates* Monitoring, MVRD

Participated for the second year in monitoring vegetation and soil attributes of the upper Falls Creek fens and existing *C. gynocrates* populations. Soil disturbance, vegetation composition and canopy cover were monitored in four small fens. We constructed exclosures in three of the fens in 2009. Transects both inside and outside the exclosures, have been sampled for the past two years. We are interested in the response of *C. gynocrates,* a Region 6 sensitive species, and fen ecosystems to removal of annual recurrent livestock grazing.

Site 2 Pre-Exclosure Construction 6/12/09 > Site 2 Inside Exclosure 8/10/2010

Figure 1. 2009 & 2010 Cover Comparisons of *Carex gynocrates*.



- The results are preliminary and do not reflect complete soil or vegetation analyses.

- There appears to be significant changes in the vegetative cover of *Carex gynocrates* inside the exclosures following the installation of the fences.

2) PIBO Multiple Indicator Monitoring (MIM), MVRD

An Interdisciplinary Team selected five streams on the Methow Valley Ranger District to be monitored by Area 2 Ecology personnel. During the 2010 field season, five stream monitoring sites were established, sampled, data were entered, and data analyzed in the MIM Data Analysis Module. The assessment focused on the effects of grazing management on stream channel attributes and streamside vegetation. The table below displays the ecological condition from data analyses of these five streams that were monitored

Table 1. Streams monitored on the Methow Valley Ranger District.

Stream Name	**Ecological Status**
8-Mile Creek	Good
Falls Creek	Good
Black Canyon Creek	Good
Goat Creek	Good
Squaw Creek	Good

3) Range Condition and Trend Monitoring, TRD

The Area 2 Ecology Program monitored historical allotment key areas during the 2010 summer field season. Sampling followed the Natural Resources Information System Terra (NRIS Terra) range protocols for Nested Frequency and Cover/Frequency. In addition, the Parker 3-Step methodology was used to estimate current range condition and trend by the same "yardstick" that was used historically on the forest. Data collection is compatible with the R6 range handbook supplement that describes monitoring protocols and methods. Allotments were selected based on

interviews with forest personnel; priority allotments identified were those scheduled for NEPA Planning over the next few years.

A total of 7 permanent clusters were re-established and monitored. Time was also spent on logistics planning, training, digital image indexing, labeling, and electronic storage, geographical information system (GIS) development, and local Parker 3-Step database entry. All site data and narratives, Cover/Frequency data, and Nested Frequency data was migrated into NRIS Terra with the help of the national NRIS staff. Data analyses are incomplete currently, but data assessments of Parker 3-Step data are displayed in Table 2. Analyses of cover/frequency and nested frequency data entered into NRIS will be performed on all seven clusters to summarize current range vegetation attributes from the 2010 data.

Table 2. Parker 3-Step analysis of range clusters sampled in 2010

District	Cluster Name	Condition	Trend
Tonasket	Cedar C-23	Poor	Down
Tonasket	Cedar C-25	Poor	Static
Tonasket	Cedar C-26	Fair	Static
Tonasket	Cedar C-27	Poor	Down
Tonasket	Cedar C-28	Poor	Static
Tonasket	Aeneas C-36	Good	Static
Tonasket	Aeneas C-38	Fair	Down

Ecology crew member monitoring C&T transect on the Cedar Allotment, TRD

4) Effects of Competition and Environmental Factors on Climate-Growth Relationships: Implications for Forest Restoration and Management on the Colville National Forest

This project is an investigation of factors influencing the climatic sensitivity and vulnerability of *Pinus ponderosa* and *Pseudotsuga menziesii* on the Colville National Forest. Conclusions will help researchers better predict climate change-related responses for these two dominant conifers species as well as inform new management actions.

Research Objectives:

- Determine the primary climatic factors that affect radial growth of *Pinus ponderosa* and *Pseudotsuga menziesii* across a temperature and moisture gradient on the Colville National Forest

- Assess the influence and potential interactions of inter-tree competition and local stand conditions on climatic sensitivity and climate-growth relationships

- 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*.

Research Accomplishments:

- Completed preparation, crossdating, error-checking and measuring of over 1,300 tree cores from sixteen stands across the full elevational distribution of *Pinus ponderosa* and *Pseudotsuga menziesii* on the Colville National Forest

- Began data analyses and summarizing results in conjunction with the University of Montana and USFS RMRS scientists.

- Project is on track to be completed in FY2011 as originally proposed in FY2008.

Field sampling: Stand measurements and core collection

Wildlife Ecology Projects

5) Fire and Large Trees

The objective of this project is to summarize existing data on the effects of prescribed fire on large trees within dry forests. The initial field work for this project was funded by Region 6 Fire Program. Funding from the Area Ecology program was used to complete data analysis and summary, which was completed this year. Next year a report will be produced that summarizes the monitoring results and proposes a monitoring protocol that can be used by other Forests interested in doing similar monitoring.

6) Habitat Connectivity

This project was a continuation of the work started last year. Funding from the Area Ecology program allowed for participation on the Washington Wildlife Habitat Connectivity Working Group, which included a wide variety of state, federal and non-governmental partners. The working group completed the initial assessment of Habitat Connectivity and has published the results:

- Washington Wildlife Habitat Connectivity Working Group (WHCWG). 2010. Washington Connected Landscapes Project: Statewide Analysis. Washington Departments of Fish and Wildlife, and Transportation, Olympia, WA. http://www.waconnected.org.

7) Spotted Owls and Fire

This project included two aspects useful in the development of the Northern Spotted Owl Recovery Plan, Forest Planning, and project level planning. The first aspect included a spatial evaluation of overlap between northern spotted owl habitat and priority areas for fuels treatments. This evaluation was published in a journal and referenced in the spotted owl recovery plan. An additional aspect included a summary of the available literature about the effects of fire on spotted owl habitat and site occupancy. This resulted in a report that was provided to the East-side Spotted Owl Working Group, a committee of the Northern Spotted Owl Recovery Team.

- Gaines, WL, RJ Harrod, J Dickinson, AL Lyons, and K Halupka. 2010. Integration of Northern spotted owl habitat and fuels treatments in the eastern Cascades, Washington, USA. Forest Ecology and Management 260: 2045-2052.

8) White-Headed Woodpecker Monitoring

We used this funding to participate in the regional effort to monitor white-headed woodpecker habitat and population trend. Monitoring sites were identified on the Wenatchee River and Cle Elum Ranger Districts and the Regional Monitoring protocol was tested. We successfully completed all sites and have now secured Regional funding to participate in the regional network in FY2011. Monitoring of the white-headed woodpecker is particularly important because this is both a focal and management indicator species in our revised Forest Plan.

9) Monitoring the Effects of Prescribed Fire on an Endemic Mollusk

The field work for this monitoring study was completed in 2009 and was funded by the Region 6 Interagency Special Status and Sensitive Species Program. Area Ecology funding was used to complete data analysis and publication of the results of this important effort. Understanding how prescribed fire affects the endemic Tiny Canyon Mountain snail is critical to development of a conservation plan for this species and for determining the appropriate restoration treatments that should occur within their habitats. A manuscript presenting the results of this study in currently in press:

- Gaines, W.L., A.L. Lyons, K. Weaver, and A. Sprague. In press. Monitoring the effects of prescribed fire on an endemic mollusk in the dry forests of the eastern Cascades, Washington, USA. Forest Ecology and Management.

Fire Ecology Projects

10) Established and collected data from permanent Forest Monitoring plots in project areas on multiple Ranger Districts on the Okanogan-Wenatchee National Forest. Data collected includes understory and overstory canopy cover and surface fuel loadings. Some of these plots are new, pre-treatment plots and some of these plots

were post-treatment, re-measurements following thinning of plots initially installed in 2009. These thinned areas also are planned for fuel reduction treatments (burns) in 2011 and 2012 and will be sampled again following those treatments. Preliminary analyses from thinned plots indicate the following results:

- 75% reduction in mature live trees per acre
- 61% reduction in basal area
- 24% increase in live crown base height
- 27% increase in quadratic mean diameter
- 25% increase in 1-1000 hour time lag surface fuels
- 34% increase in duff/litter depth

11) Completed resample of plot photo points at all Joint Fire Science Project mastication sites to visually assess changes in forest vegetation cover and species composition following treatments.

12) Analyzed data on survival of fire-damaged ponderosa pine. Data came from transects initially established in 2007 following the 2006 Tripod Fire. These transects were re-sampled during 2009 to assess longer-term mortality and damage due to wildfire damage to boles and crowns. The greatest amount of mortality occurred during the first year following the fire (27%), but that had increased by another 18% by the 3rd year following the fire. Two factors were assessed as possible predictors of mortality; bole char and crown scorch. The amount of bole char and mortality followed a strong linear relationship and was a good predictor of potential mortality (r2=.939 after the first year and .949 after the 3rd year). The relationship between crown scorch and mortality was much less (r2=.186 after the 1st year, but had increased to 0.714 after the 3rd year.

13) Assisted local botany crew to complete resample of monitoring plots and transects to assess changes in cover and frequency of wet meadow species being impacted by cattle grazing. Monitoring specifically focused on *Carex dioca* as this species is on both the R-6 sensitive and Washington Natural Heritage Program Sensitive lists.

14) Developed sampling protocols for impacts of prescribed fire to vegetation cover and surface fuel loading in riparian corridors. A total of 16 transects were installed in 2 burn units on the Methow Valley RD to measure pre-burn conditions. One of the two units was burned this past fall but early season snowfall on the unit occurred before the post burn resample was done. Those transects will be sampled again this following season and the other unit is also scheduled for burning this year.

15) Complied information on the availability of historic aerial photographs that cover the area burned by the 2006 Tripod Fire. Acquired reproductions of the oldest known aerial photos of that area (1947).

16) Collected fuel moisture samples as requested at various locations on the Forest during the summer months to provide fire management planning with site specific information about fuels conditions and wildfire potential.

Consultation (Assistance to Forests)

1) Okanogan-Wenatchee National Forest Travel Management Plan Draft EIS

   The Ecology Program provided support to this Forest planning effort. Personnel performed analyses and developed portions of the Draft EIS Travel Management Plan. This included:

   - analyzing vegetation, TES, and invasive plant data
   - writing the Affected Environment
   - identifying mitigation measures and issues for TES and invasive plants
   - provide Survey and Manage (S&M) habitat information and survey cost estimates

2) Colville and Okanogan-Wenatchee National Forests' Land Management Plan Revision

   Area Ecology functions in a support role for plan revision IDT. Assisted in assessments for wilderness recommendations, wild and scenic river candidates, and developed non-forest vegetation, invasive plant, and rare plant forest plan components.

Cooperation and Technology Transfer

1) Analyzed and prepared summary report on survival of fire-damaged ponderosa pine.

   - Completed fire effect monitoring reports that describe results and achievement of burn plan objectives for 2 prescribed burn units on the Methow Valley RD.

2) Worked with Washington State Dept. Of Wildlife area manager to collect fires scar samples to help define historic fire regimes for an area that is planned for a cooperative prescribed burn on both Forest Service and State land ownerships.

3) Assisted in developing 1-day aerial photo interpretation workshop for Forest personnel working with Ecosystem Management Decision Support (EMDS).

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

Team: Sabine Mellmann-Brown, Jenifer Ferriel, Ken Stella

Projects

1) Groundwater Dependent Ecosystem (GDE) Inventory:

The NE Oregon Ecology Program was selected as one of five units nationwide to field test protocols for inventory and monitoring of groundwater dependent ecosystems. This pilot study included two different protocols under development: The level 1 protocol consists of a qualitative baseline inventory and can serve as a management prioritizing tool. The level 2 inventory collects a higher amount of quantitative data and is suitable for monitoring.

Marc Coles-Ritchie, Steve Solem and Ken Stella reading a vegetation quadrat during GDE training.

The major goal of the GDE pilot was to assist in the development of useful tools for spring and fen inventories, and to bring expertise from three different National Forests together to evaluate and understand the resource value of GDEs in the Blue Mountains. The GDE protocols were field tested by 21 Forest Service employees and student assistants with expertise in hydrology, botany, ecology, soils and aquatic biology. From June through September 2010, we inventoried a total of 46 springs and 21 groundwater dependent wetlands or wetland components in the Blue Mountains. We tested the Level 1 protocol on 45 springs and 14 wetlands. The Level 2 protocol was tested on 1 spring and 7 wetlands. A protocol evaluation including time requirements and suggestions for improvement was submitted to the protocol development team for consideration during final protocol revision.

GDE inventory served multiple functions for participating forests. The protocols helped obtain improved data on spring type and condition for range allotment management plan analysis, prioritize negatively impacted spring ecosystems for restoration actions, and increase knowledge of special habitats and sensitive species distributions. The collaborative effort exposed district and supervisor office personnel to GDE related issues and concerns that may translate into improved management and conservation of these important resources.

2) Bartonberry Survey

As part of a two year study funded by ISSSSP (Interagency Special Status Sensitive Species Program), an interagency team of ecologists and botanists spent one week in the spring of 2010 collecting detailed ecological information and mapping *Rubus bartonianus* (Bartonberry) in the area below Hells Canyon Dam to just south of the confluence of the Snake and Salmon Rivers. Bartonberry is a deciduous shrub endemic to Hells Canyon of the Snake River and its tributaries. In Oregon, Bartonberry has been reported from the Snake River in Hells Canyon between Copper Creek on BLM land, to Christmas Creek, about 48 air miles. We wanted to know the total extent of the population of Bartonberry on the Oregon side of the Snake River, as well as revisit known sites to better document its habitat and life history. In addition, we hoped to gain a better understanding of threats to Bartonberry such as fire, invasive plants, insects, disease, and browsing by ungulates.

Snake River in Hells Canyon and *Rubus bartonianus*

The 2009 and 2010 searches failed to detect Bartonberry at Copper Creek or Christmas Creek and it appears Bartonberry has been extirpated from these sites. The population of Bartonberry in Oregon currently occupies two disjunct portions of Hells Canyon. The southern portion, between Lynch Creek and Cache Creek, covers about 15 river miles. The smaller northern portion from north of Pleasant Valley Creek to south of Somers Creek, is about 2.25 river miles. The Idaho side of the population corresponds, more or less, with the Oregon population, with the exception of the Steep Creek population, which lies between the southern and northern populations. Our observations led us to believe that the greatest threat to Bartonberry is the invasive Himalayan blackberry (*Rubus armeniacus*). A final report for ISSSSP was written in collaboration with the Vale BLM and will be posted on the ISSSSP website. Population data have been entered into the NRIS database.

3) Fire-Effects Monitoring

This long-term project was initiated in 1986, after extensive fires on the forest. We are following the vegetation development of burned sites in 5 year intervals. In many instances we have pre-fire vegetation data. In 2010 we re-sampled 60 plots with fire dates ranging from 1988 to 2009. Six of these plots were located on the Umatilla NF in one fire, seven plots were on the Malheur NF in five different fires, 37 plots were in Hells Canyon National Recreation Area in four fires, and nine plots were in other districts of the Wallowa-Whitman NF in two fires.

4) Egley Fire Photo Monitoring

We documented vegetation recovery following the Egley Fire on the Malheur NF. The project was initiated in 2006 by retired regional ecologist Fred Hall. In 2010, Fred Hall, Ken Stella and Forest Service volunteer Ginger Hall visited 32 plots four times during the growing season and documented trend with repeat photography. This was the last monitoring season. We will cooperate with Fred Hall to summarize results for a final report.

Fred Hall at one of his permanent photo monitoring sites on the Malheur NF

5) Fred Hall's Long Term Photo Points

Retired ecologist Fred Hall installed and monitored over 100 permanent photo points in the Blue Mountains, dating back as early as 1956. Sites were revisited in approximately 5 year intervals, and many photo locations are associated with Parker-3-Step data from the earliest visit. We accompanied Fred Hall for two weeks to relocate and GPS his permanent photo points on the Malheur and Wallowa-Whitman NF. We began an inventory of his slides and data cards and intend to archive materials and documentations digitally for future use.

6) Green Fescue Monitoring

This study documents the long-term changes of green fescue grasslands in the Wallowa Mountains with a history of severe sheep grazing. It was initiated by Arthur Sampson over 100 years ago, with the majority of quantitative vegetation data going back as far as 1952. Sites were last visited by Charley Johnson in 1998/1999. Most of the legacy data is now housed at the Eastern Oregon University Library. In August 2010, we visited the Tenderfoot Basin in the Wallowa Mountains and re-measured vegetation composition of 15 transects in seven sites. For comparison purposes, we used the Parker-3-Step method, but also collected line-point-intercept data on the same transects. We re-sampled four ocular macroplots established by Charley Johnson 25 years ago, and took repeat photos of several historic photo points. The location of transects, macroplots and photo points was recorded with GPS equipment to facilitate future re-sampling efforts.

7) Slide Scanning and Data Management

We decided to scan our extensive slide library to create a digital data backup, improve photo access, and save office storage space. In 2010 we had 37,000 slides professionally scanned. Of those, approximately one third have been catalogued and cross-referenced to site visits in our Access database.

Green fescue monitoring in Tenderfoot Basin, Wallowa Mountains

Consultation (Assistance to Forests)

As a significant part of our plan of work, we provide project support to local Forest units, make site visits and consult on a variety of management issues. We solicit assistance requests from forest and district personnel on an annual basis. In 2010, we received 42 formal assistance requests from all three National Forests. For a number of these requests we responded with multiple plant association and range trainings (see Cooperation and Technology Transfer). Several other projects are described below.

1) Conifer Removal Effects Monitoring: Initiated monitoring project to quantify effects of small diameter *Pinus ponderosa* and *Juniperus occidentalis* removal on plant communities. In the Malheur NF, mid-elevation areas with high shrub densities are important winter range for deer and elk populations. However, due to past grazing, logging, and fire suppression activities many of these areas have high conifer densities and high canopy closures. Resultant limited resources are thought to reduce shrub and herbaceous plant abundances. We installed and inventoried 14 cover frequency plots across the 1,000 ha conifer removal project area. Monitoring will proceed for a minimum of 3 years post treatment.

2) Eastside Allotment Evaluations: Visited range allotments in Wallowa Mountains and developed a seeding-and-exclosure experiment in roadside areas dominated by coneflower (*Rudbeckia occidentalis*) and annuals. Areas appear to be in an early seral stage with little perennial cover. Established four exclosures (~63'x 32') with equal non-fenced controls. Half of the area was seeded in fall using native seed material. Inventoried initial conditions with line-point-intercept and full species lists.

3) RNA (Research Natural Area) establishment: Site visits to proposed RNA on Baldy Mountain. Updated plant list, collected voucher specimen, revised RNA boundary and revised draft establishment report.

4) RNA evaluation: Visited and evaluated wetlands in Birch Creek RNA, Indian Creek RNA and Point Prominence proposed RNA.

5) Riparian Restoration Projects: Site visits to three restoration projects on the Malheur and Wallowa-Whitman NF. Surveyed project areas to determine hardwood planting success, identified plant associations and recommended actions for future projects.

6) Multiple Indicator Monitoring (MIM): Assisted with plant identification and MIM on range allotments.

7) Rangeland Analysis: Provided condition and trend data and other pertinent vegetation inventories from databases and original plot sheets. Assisted several districts with data interpretation and analysis.

8) Noxious Weed ID Team: Participated in site visits of Himalayan blackberry in Hells Canyon to discuss site prioritization and treatment strategies.

Cooperation and Technology Transfer

Trainings and Presentations

Jenifer Ferriel with Malheur NF employees at a plant association training

1) Two Upland Plant Association Trainings on the Malheur NF, May and June 2010. Trainings were attended by BLM and Forest Service employees from the Malheur, Umatilla and Wallowa-Whitman NF. Program areas represented at the trainings included botany, fire, range, silviculture and Forest Inventory and Analysis (FIA).

2) Riparian Plant Association Training on the Wallowa-Whitman and Umatilla NF, July 2010. At this training we introduced our new aspen community classification guide by Dave Swanson et al.

3) Presentations at the annual Tri-Forest range management training, Pendleton, April 2010, on a) Determining long-term trends in the health of riparian woody species, b) Analyzing Parker-3-Step data, and c) Determining trend – Which method works best?

4) Condition and Trend (C&T) Field Methods Training on the Malheur NF, June 24, 2010.

5) Facilitated Fire Regime Condition Class (FRCC) Training on the Wallowa-Whitman NF, June 2010.

6) Facilitated GDE Pilot Field Training on the Wallowa-Whitman NF. The training was attended by 14 participants from the three National Forests in the Blue Mountains, neighboring Forests, and R6 staff.

7) Poster presentation: Stella, K.A. C.S. Sieg, and P.Z. Fulé. Altered plant community composition following high-severity wildfires and seed additions. 4th International Fire Ecology and Management Congress: Fire as a Global Process. The Association for Fire Ecology. November 30- December 4, 2009, Savannah, GA. This trip was sponsored by the USFS Rocky Mountain Research Station in Flagstaff, AZ.

8) Presentation: Mellmann-Brown, S. Understory development in successional whitebark pine communities after the Yellowstone fires. "High-Five" Symposium: The Future of *High*-Elevation *Five*-Needle White *Pines* in Western North America, June 28, 2010, Missoula, MT.

9) Poster presentation: Mellmann-Brown, S. Survival and growth of whitebark pine regeneration in the timberline ecotone of the Beartooth Plateau. "High-Five" Symposium: The Future of *High*-Elevation *Five*-Needle White *Pines* in Western North America, June 29, 2010, Missoula, MT.

Publications

10) Stella, K. A.; Sieg, C. H.; Fulé, P. Z. 2010. Minimal effectiveness of native and non-native seeding following three high-severity wildfires. International Journal of Wildland Fire 19, 746-758.

11) Swanson, David K,; Schmitt, Craig L.; Shirley, Diane M.; Erickson, Vicky; Schuetz, Kenneth J.; Tatum, Michael L.; Powell, David C. 2010. Aspen Biology, Community Classification, and Management in the Blue Mountains. USDA Forest Service, Pacific Northwest Research Station, General Technical Report PNW-GTR-806, 117 pp.

Other Cooperation and Outreach

12) Assisted a team of modelers from the Institute of Natural Resources (INR) in the creation of a potential vegetation type map of Northeast Oregon. This effort is part of INR's Integrated Landscape Assessment Project. We provided plot data, verified crosswalk tables and helped field-verify the draft map. In general, INR modeled potential vegetation types using "Random Forest" classifiers. The map provides finer detail compared to the Henderson vegetation zone model, but is on a coarser scale than our plant association groups (PAGs). The model should be used "with caution" since INR has not yet calculated classification accuracy measures.

13) Facilitated the annual herbarium foray of University of Washington on Baldy Mountain, Malheur NF, July 2010. Led participants in plant identification and collection efforts.

14) Attended a 2 day meeting on riparian rangeland monitoring in Lakeview, SE Oregon, August 2010.

Program Goals FY2011 and beyond

The NE Oregon ecology program will continue its emphasis on providing ecology support to local Forest Service units. We are also supporting several ongoing monitoring and inventory projects, in particular our fire-effects studies which are now entering their 25th season. Beside these long-term commitments, our program will focus on the following projects:

1) Habitat Suitability for White-headed Woodpeckers. We received regional funding to collect data on habitat structure and occupancy of mature, open ponderosa pine forests in the Blue Mountains.

2) Whitebark Pine Health Monitoring

   - In 2010 we received Forest Health Monitoring Program funds to re-measure 200 permanent whitebark pine transects in the Elkhorn and Wallowa Mountains. Field work is scheduled for the summer of 2011, with participation of TEAMS Enterprise.

   - Whitebark Pine Health Survey in the Seven Devils, Idaho. This mountain range is located on the Idaho side of Hells Canyon National Recreation Area, and is administered by Region 6, Wallowa Whitman National Forest. We currently have no information on the condition of the whitebark pine forests in this area. Our goals include the establishment of permanent monitoring transects and gene conservation cone collections.

3) Level 1 Spring Inventory and Improvement. The national GDE protocols are going through their final revision and should be available spring 2011. We intend to introduce the protocols during our range trainings as useful tools to assess spring and fen ecosystems and prioritize negatively impacted spring ecosystems for restoration actions. Pending regional funding, we will develop spring restoration projects that result in strongly improved ecosystem functions while still serving the needs for livestock use.

4) High elevation fungi survey. We received Interagency Special Status Sensitive Species Program (ISSSSP) funding to facilitate a second mushroom foray in the vicinity of Anthony Lakes.

Central Oregon Area Ecology Program (Area 4)
Deschutes, Ochoco, and Fremont-Winema National Forests

Team: Gregg Riegel, Mike Simpson, Elizabeth Johnson, Sara Prueitt Lovtang

Projects

Administrative Studies

Field Based Monitoring

1) Riparian Ecological Type Classification and Scorecard Guides

- The Riparian Field Guide for Fremont National Forest and Lakeview BLM District was developed from 395 permanent plots we established from 1995 to 2002 on Fremont National Forest and Lakeview District BLM lands. 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. Fremont-Winema National Forest is using the guide for Effectiveness Monitoring for the Programmatic Biological Opinion for Listed Suckers and Bull Trout, Range Analysis, Water Quality Implementation Plan Effectiveness Monitoring, and Forest Plan Monitoring Report.

  Status: FY 10 final draft peer reviewed. FY 11 external review and secure funds for publication.

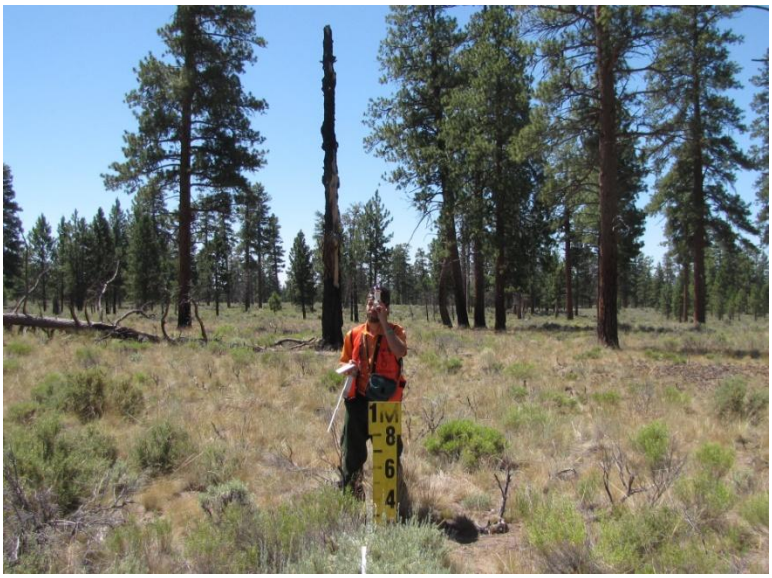
- A field guide has also been developed for the Ochoco National Forest using data from 268 plots we established from 1997 to 2002. Similar to the Fremont guide, some ecological types and scoring attributes differ to the extent that landforms, soils and vegetative composition reflect environmental conditions unique to the Ochoco physiographic area.

  Status: A working draft is being used for monitoring riparian ecological status and trend for range Allotment Planning. Finalize draft for internal review in FY 11.

2) Alternative Fuels Treatment Study

This study was began in 2000 to examine the long-term ecological effects of spring and fall prescribed fire, mowing, and thinning and thinning and burning in 5 different ponderosa pine/antelope bitterbrush plant associations on the Deschutes, Fremont-Winema, and Modoc National Forests. All 73, 1.0 ha (2.47 ac), permanent plots, were measured prior to treatment, and post-treatment measurements were conducted annually though year 5, and then on a five year interval through year 20. Plots were

treated in different years, but most have now had at least 5 years of post-treatment measurements. Matt Busse, Research Soil Microbial Ecologist, Forest Service Pacific Southwest Station, Davis, California, is a cooperator.



Ryan Brown takes overstory canopy measurements.

Overstory measurements include measuring tree diameters, heights, and crown heights; canopy cover; and leaf area index. Understory measurements include cover and frequency of herbaceous species; shrub cover, density, height, and volume; shrub resprout growth and survival; and shrub and tree seedling density. Additionally, litter and duff cover and depth are measured.

Status: 20 plots remeasured in FY 10. 26 plots will be remeasured in FY11.

3) Post-Wildfire Salvage Logging Study

In 2003, the 18 Fire burned approximately 3810 acres of ponderosa pine 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 this study. Three additional plots were installed, and each plot was assigned either salvage or non-salvage treatments, with treatments occurring in 2004. Measurements have been made every year since logging occurred, and we currently have six consecutive years of data. This area is heavily utilized by mule deer, and bitterbrush foliar cover has rapidly returned to at or above pre-wildfire values (~13%), and is continuing to increase at a steady rate of 2-3% of cover each year.

Status: All 6 plots were remeasured FY10 and are also scheduled for FY 11.

4) Reintroducing Fire in Eastside Ponderosa Pine Forests: Repeated Fire Interval Study

We are examining long-term changes in understory composition, structure, and soil processes in units that are repeatedly burned in ponderosa pine. This was the first and is the longest running repeated fire interval study in the northwest. Three treatment time intervals of 5, 10, and 20 years, and a control were selected based on the range of fire return intervals. We are also examining the effect of season of burn by comparing a spring treatment vs. fall treatment at the 10 year interval. There are three replications for each treatment for a total of 16, 1.0 ha (2.47 ac) plots. One unit on a 5-year return interval plot was burned in late September 2009, and fuels data was collected on the burned plot during the 2010 field season. Research Forester Andy Youngblood, PNW, La Grande is focused on the overstory and down wood composition and structural changes.

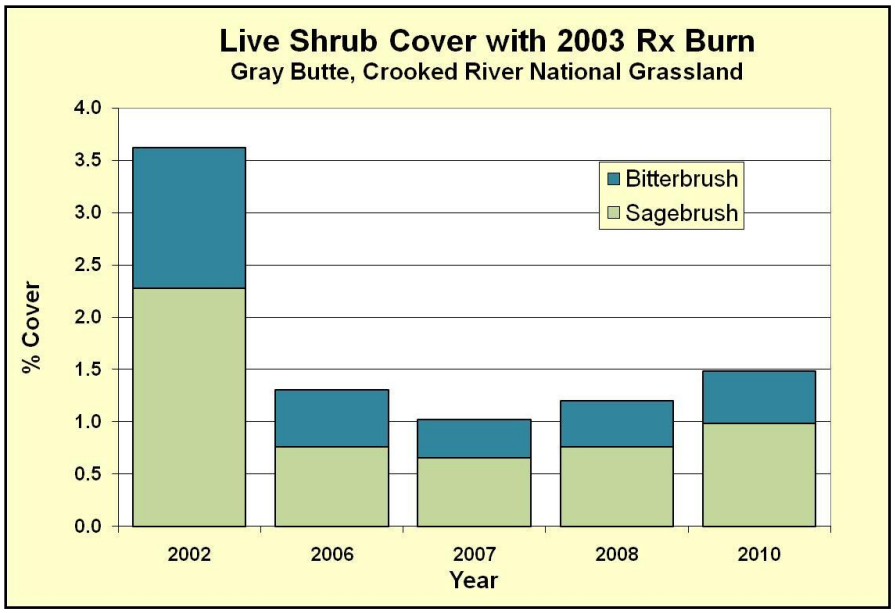
Status: One 5 year treatment plot was burned in FY10. Fuels were measured both pre- and post-burn. All other attributes are measurements biannually with FY 11 as the next scheduled remeasurement. The 5, 10, and the first 20 year interval plots will be treated in the fall of 2012.

5) Effectiveness of Prescribed Fire on Juniper Reduction Fuel Treatments on the Crooked River National Grassland

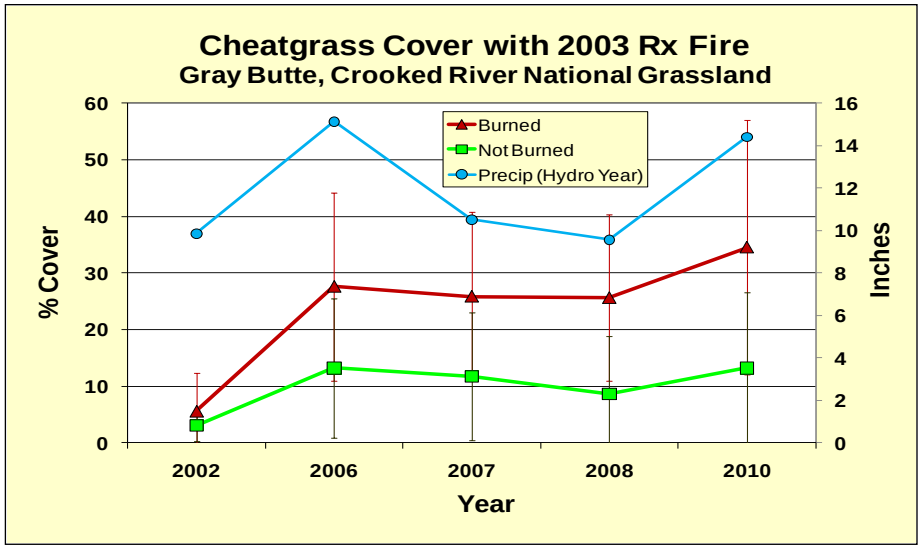
The objective of this study is to quantify long term vegetation response to prescribed fire use in juniper-sagebrush. The juniper cover and density was reduced, and sapling density (less than three meters tall) is currently about half of pre-treatment density. Perennial grasses are now the dominant lifeform. Our concern is that cheatgrass has increased in cover from 5% pre-treatment in 2002 to 27% in 2010 and is positively correlated with the pretreatment abundance and annual precipitation. Remaining concerns include comparing mechanical treatments to prescribed fire on adjacent sites and long term persistence of elevated levels of cheatgrass. Plots were measured annually through year five and will be measured biannually through year 10. Following an exceedingly wet spring our June 2010, cheatgrass cover has increased, and new springs have emerged. Data from this study is being used to develop a decision tree for restoration/fuel treatment planning.

Status: 12 plots will be remeasured in FY2012

The following graphs show some preliminary results of this study.



Live shrub cover was low in 2002 and was furthered reduced with treatment. It now appears to be gradually increasing.



Cheatgrass cover increased on all plots, and was correlated with the amount of each plot that burned and with pre-treatment cheatgrass cover.

6) Bitterbrush Population Dynamics

We are currently analyzing bitterbrush age data from 10,000 shrubs collecting during a retrospective study done from 1997-1999 on the Deschutes N F. Over 138 plots were sampled to assess bitterbrush response to wildfire, prescribed fire, and mowing treatments along a precipitation gradient. Age data from nearly 2200 shrubs from the retrospective study are also being analyzed. To determine age, shrubs were cut at the base of the stem (soil surface) and the annual growth rings were counted on each

"cookie" under a dissecting microscope. Our analysis will be used in the Mule Deer Habitat Selection Model currently in the planning stages of development by DeWayne Jackson (Oregon Department of Fish and Wildlife, Roseburg) and Marty Vavra and Mike Wisdom (Pacific NW Research Station, La Grande).

Status: The age data, environmental variables, and GIS locations have been compiled in a database. A literature review and assessment of current statistical tools has been done.

Ecological Modeling

7) Potential Natural Vegetation (PNV) Modeling for Central Oregon

Simpson completed a working draft of sub-series Maps for the North Klamath Province (Eco-Regions 20208, 20209, 20210, 10305) with help from Sara Lovtang. It builds on methods developed by Henderson and Lesher of the Western Washington Area Ecology Program, and applies them to Oregon east of the Cascades Mountains. A significant portion of this project included creating a spatial soils layer for central and eastern Oregon from numerous existing data sources (SSURGO, TEUI, SRI, ESI, and STATSGO) and creating common soil attributes to use in the models. Work continues on the north half (Deschutes and portions of the John Day Provinces). This area extends from Bend to the Columbia River and from the Cascade Crest east to the John Day River and the South Fork John Day River.

- Supports IMAP (defines area where specific VDDT models apply)
- Supports Pine Bark Beetle Risk Mapping Project (FHM Project)
- Implements New East Cascades Plant Association Classification (at the sub-series level)

Status: Draft Vegetation Zones (series level) and Plant association groups (sub-series level) of the south half of the area (Bend to the California Border from the Cascade Crest east to Plush) were delivered in September 2009.

8) Assessment of Region 6 Aerial Detection Survey (ADS) mountain pine beetle (MPB) mortality using CVS repeat measurements of individual tagged trees.

Conducted a formal region-wide assessment of ADS MPB mortality estimates in terms of spatial agreement and intensity of mortality with ground based sampling of lodgepole pine mortality.

Key findings: ADS significantly under-estimates the spatial extent of MPB mortality. Only 18% of plots with dominant and co-dominant tree mortality were mapped by ADS. Low spatial accuracy is attributable to failure to detect on-going mortality not spatial misalignment of the mapped polygons. High MPB mortality within the CVS

plot re-measurement period increases the likelihood of detection. MPB mortality events prior to CVS plot establishment seems to inhibit aerial detection of subsequent MPB mortality and decrease the probability of inclusion in an ADS mortality polygon. Where ADS and CVS data sources both show mortality, ADS underestimates dominant and co-dominant tree mortality levels on average by a factor of 2-3 times.

Status: This assessment resulted in a Poster presented at the 2010 National Forest Health Monitoring (FHM) conference as well as a Poster and Formal presentation at the 2010 Western Forest Insects Work Conference (WFIWC). A journal article documenting the methods and results is planned for 2011.

9) Region 6 Assessment of Tree Species Distribution for National Insect and Disease Risk Maps (NIDRM) Risk Models

Simpson compared modeled tree species distributions from Forest Health Technology Enterprise Team (FHTET) in Ft. Collins to known plot locations from Continuous Vegetation Survey (CVS) – Forest Inventory and Analysis (FIA) inventory plots and from R6 Ecology Plots acquired from each of the Area Ecology programs in the region. Simpson checked for areas where the species occurred in the plot data, but not in the modeled surfaces and also for areas where it was present in the modeled surfaces, but did not occur in the plot data.

10) Viable Ecosystems-GNN–FVS Tools

Simpson continued development of Viable Ecosystems - Gradient Nearest Neighbor (GNN) – Forest Vegetation Simulator (FVS) Tools with Leo Yanez for project analysis. These tools provide a simple way to implement local landscape vegetation analyses on Ochoco, Deschutes, and Fremont-Winema NF's. The tools translate the spatial tree lists from GNN into the various state classes (combinations of Species Composition, Size-Structure, and Density) used in the landscape analyses.

- WILDHAB – Wildlife Habitat Analyses (used for Vegetation Mgt project, Travel Mgt Assessments, Firewood etc.).

- Snag – Down Wood Analyses – Develop a consistent repeatable forest-wide process to assess snag and down wood densities compared to HRV of vegetation state classes.

- Completed landscape analyses using GNN derived existing vegetation compared to HRV.

11) Support to IMAP

- Developed new Vegetation Dynamics Development Tool (VDDT) Model for Cold-Dry White Fir PAG for East Cascades

- Continued to explore feasibility of Interagency Mapping and Assessment Project (IMAP) products (GNN and VDDT models) use at the project scale.

12) Cheatgrass Predictive Model for Central Oregon to Restoration Planning

The objective of this study was to develop a model that predicts the presence of cheatgrass in central Oregon. Understory data from the USDA Forest Service's Current Vegetation Survey (CVS) throughout the Deschutes and Ochoco National Forests and the Crooked River National Grasslands were compiled, and the presence of cheatgrass was determined for 1,098 plots. The best predictors of cheatgrass: drier average March precipitation, warmer minimum May temperature, fewer total trees per acre, greater juniper per acre, and shorter distance to nearest road. The plots were assigned to a plant association group (PAG) and a map was produced that depicts the probability of cheatgrass.

Status: A Map was produced and is available in the corporate database. To be submitted to Invasive Plant Science and Management by end of March 2011 following rejection from Ecological Modelling, January 2011.

<u>Technology Transfer and Consulting</u>

Teaching, Presentations, & Workshops

1) Mule Deer Habitat Symposium-February, Riegel and Simpson

2) Central Oregon Fire Science Symposium-April, Riegel and Johnson

COCC students are given hands-on experience with fire ecology monitoring protocols from Elizabeth Johnson.

3) Interagency Mapping and Assessment Project (IMAP) website support, Simpson and Lovtang

4) Rx 310 Flora and Weed Modules-February, Riegel

5) Fire Ecology and Effects FOR 209, Central Oregon Community College (COCC) - Spring term (3 unit class), Riegel

6) Fire Ecology and Effects and Wildlife lecture, COCC, Johnson

7) Riparian Monitoring Methods, August

   Riegel organized and led a workshop and field discussion of riparian monitoring methods and the review of the draft Fremont NF and Lakeview BLM Riparian Classification and Scorecard Field Guide. E. Johnson and Peter Sussmann participated in discussions.

Participants in the Riparian Monitoring Methods workshop discuss issues involved with streambank monitoring (left)and meadow monitoring (right).

8) Plant identification in western juniper plant associations, June

   Johnson taught a one day workshop to the Central OR PNW FIA field crew in plant identification in juniper-sagebrush plant associations.

9) Corridor Management Planning Webinar Series

   Johnson assisted R. Gyorgyfalvy in presenting methods for conducting resource inventories.

10) Status of Whitebark Pine Workshop, Lakeview, OR and Alturas, CA.

Planning occurred in FY10, and workshop was conducted in FY11. Riegel, in cooperation with Anne Mileck, Zone Silviculturist Modoc NF, organized and led a multi-forest discussion of whitebark pine ecology in the Warner Mountains of Oregon and California. Participants from California and Oregon-based Forest Health teams, entomologists, pathologists, botanists, silviculturists, and fire ecologist contributed to the discussions. Simpson presented on whitebark mapping, and Johnson functioned as the official note taker for the meeting. A white paper is being written and will be completed in FY11.

Judy Perkins (Forest Botanist, Modoc NF, left photograph) and Andy Eglitis (Area Entomologist, right photograph) are among the presenters at the Status Of Whitebark Pine Workshop in the Warner Mountains.

11) National Forest Health Monitoring (FHM) conference 2010

Simpson presented a poster on his assessment of Aerial Detection Surveys.

12) Western Forest Insects Work Conference (WFIWC) 2010

Simpson created a poster and did a formal presentation on his assessment of Aerial Detection Surveys.

13) Support to Interagency Mapping and Assessment Project (IMAP).

14) Technology Transfer of GNN Vegetation Data uses to Winema-Fremont, Deschutes, and Ochoco National Forests

15) Shared PNV Modeling Methods with ecologists from the Regional Office to facilitate modeling of PNV in Eastern Oregon for use in the American Recovery and Reinvestment Act project called Integrated Landscape Assessment Project.

Consultation

1) West Side Fuel Treatment Field Review, Fremont-Winema NF, May

2) Antelope Grazing Allotment Management Plan and Oregon Spotted Frog Habitat Assessment, Fremont-Winema NF, ongoing

3) Streambank Alteration Monitoring (MIM), Ochoco NF, on going

4) Flank Vegetation and Fuels Management Project Wildlife Review, Deschutes NF, ongoing

   Located along the eastern edge of the Bend-Ft. Rock RD, the proposed Flank project is designed to restore forest health and reduce the accumulation of fuels which has resulted from past timber projects and fire suppression efforts. Johnson represented the Ecology Program in the planning of this project, with a specific emphasis on wildlife ecology.

5) Central Oregon Firewood Program Wildlife Review, Deschutes NF, fall and winter

   Several new areas are being opened for firewood collection on the Bend-Ft. Rock RD. Johnson acted as Wildlife Biologist for the project.

6) Cascade Lakes National Scenic Byway Interpretive Plan Review, Deschutes NF, ongoing

   Member of the Cascade Lakes Scenic Byway Interdisciplinary Team. The preliminary draft of the Interpretive and Corridor Management Plan was completed in 2010, and the final draft will be completed in 2011.

7) Cascade Lakes Scenic Byway Geology Interpretive Signs, ongoing

   Johnson was part of a core group on the Bend-Ft. Rock RD which is designing and creating 6 new interpretive signs, as prioritized by the Interpretive and Corridor Management Plan. These new signs will be installed in 2011.

8) Fuzzy Fuels Treatment Project Review, Deschutes NF, fall and spring

   The EA for Fuzzy was written in 2000, and included plans for monitoring and interagency review. Wrote a reviewed of the projects history and organized an

interagency field trip to evaluate past treatments and discuss additional proposed treatments.

9) Black Canyon Fire Wild Fire Use (WFI) Evaluation

   The Black Canyon Fire was a lightning-caused fire that started in August 2008. The fire was initially managed for resource benefits (WFI), but transitioned from a small, low intensity, slow moving fire to a rapidly moving crown fire that burned old growth mixed conifer and ponderosa pine at high severity. Riegel was part of a group asked to participate in a field trip with Forest Supervisor Jeff Walter and Forest Staff to observe post-fire recovery and review lessons learned.

10) Consult with Natural Resources Staff Officer Assistant regarding climate change scenarios predicted for Central Oregon, and review of document.

Regional Office Assignments:

11) USFWS Dry Forest Working Group, Northern Spotted Owl Recovery Plan, on going

12) Regional Range Program Monitoring and Grazing Advising, on going

- Mountain Blue Eyed Grass (*Sisyrinchium sarmentosum)*, Little Crater Meadow, Mt Hood NF. Provided input on livestock grazing effects and disturbance regimes on the Mountain Blue Eyed Grass Conservation Assessment and Strategy Report. Reviewed grazing systems at Little Crater Meadow with Regional and Forest Staff.

- Mt. Adams Gotchen Meadows Condition Assessment, Gifford-Pinchot NF, WA. Provided input on grazing in Gotchen Meadows and to assess current meadow condition. Riegel, Johnson and Peter Sussman (Soils Scientist, Deschutes NF) participated in field data collection and meadow condition reporting

Dan Fissel (Range Conservationist, Mt Hood NF), Peter Sussman, Jürgen Hess (Friends of Mt. Adam), and Elizabeth Johnson assess soils and current vegetation as part of the Mt. Adams Gotchen Meadows Condition Assessment.

13) Creating a version of the Forested Plant Associations of the Oregon East Cascades that can be read on a hand held personal data recorder for field-going personnel.

Washington Office Assignments:

14) Joint Science Program Research Needs Panel, February 2010.

15) National Riparian Technical Guide Team Member, on going.

16) FIA/NRCS Oregon Rangeland Pilot Field Representative, editing reviewers comments of final report to the Chief. Complete by May 2011.

17) Moroccan Delegation from the High Commission on Forests, Water and Combating Desertification (HC) Tour of USFS Sheep Grazing Allotment Management southern Idaho, May 2010.

Cooperation

1) A Guide to Fuels Management in Riparian Areas of the Interior West , Kate Dwire, Research Riparian Ecologist, RMS , Riegel CO-PI, Joint Fire Sciences, Programs, ongoing.

Program Goals for FY 2011 and beyond

1) Finalize and publish the Riparian Field Guide for Fremont National Forest and Lakeview BLM District as a government technical report.

2) Continue development of the riparian field guide for the Ochoco National Forest.

3) Participate in a region-wide monitoring program for white-headed woodpeckers and support the development of a Conservation Assessment and Monitoring Strategy for this species under the Interagency Specials Status Sensitive Species Program (ISSSSP).

4) Continue the Potential Natural Vegetation modeling and mapping for the north half of Central Oregon. This area extends from Bend to the Columbia River and from the Cascade Crest east to the John Day River and the South Fork John Day River.

5) Publish findings of the assessment of Region 6 Aerial Detection Survey mountain pine beetle mortality using CVS repeat measurements of individual tagged trees.

6) Further develop the electronic version of the Forested Plant Associations of the Oregon East Cascades that can be read on a handheld PDA for field-going personnel.

7) Complete analysis on bitterbrush population dynamics and create a draft document for publication.

8) Continue scheduled plot remeasurements and data analysis for multiple long-term studies including the Alternative Fuels Treatment Study, the Post-Wildfire Salvage Logging Study, and the Repeat Fire Interval Study.

Team: Tom Sensenig, Patricia Hochhalter

Projects

1) Fire Ecology

In 1987, the Rogue River-Siskiyou and Umpqua National Forests established a post wildfire monitoring program to track and assess post-fire ecological processes including re-vegetation, tree mortality, regeneration, and habitat. 44 permanent transects were established in 22 burned areas. Sixteen of these plots (32 transects) were relocated, monumented, and evaluated in 2010.

Photo on the left was taken in October 1987 after the Longwood Fire. Photo on the right was taken in July 2010 from the same location.

2) Potential Vegetation Mapping

Our Ecology staff collected data throughout the Oregon coast range on Sitka Spruce and tan oak habitat for revisions to the regional potential vegetation mapping effort.

3) Wilderness Monitoring

The Rogue River-Siskiyou NF manages six wilderness areas. Each year the ecology staff participates in ecological monitoring of these areas. In 2010 the Grassy Knob Wilderness, on the Gold Beach District, was selected and visited.

4) Downed Wood Analysis

In 2010, NEPA began on a 100' wide natural gas pipeline across the Forest. Ecology staff prepared a downed wood (DWD) analysis by vegetation type needed for the post construction restoration plan.

ROR, SISK, and UMP NF's		# Plots	**Pieces/Acre**			
BLUE BOOK P/A 1996	**DIACLS**	**N**	**MINPPA**	**MAXPPA**	**MEANPPA**	**SDPPA**
PSME-PIPO/RHDI6	0	14	0	224.1	63.3	67.49
PSME-PIPO/RHDI6	11	14	0	36.2	3.96	10.59
PSME-PIPO/RHDI6	20	14	0	10.86	1.97	4.08
ROR, SISK, and UMP NF's		# Plots	**Tons/Acre**			
BLUE BOOK P/A 1996	**DIACLS**	**N**	**MINTONS**	**MAXTONS**	**MEANTONS**	**SDTONS**
PSME-PIPO/RHDI6	0	14	0	5.43	1.38	1.81
PSME-PIPO/RHDI6	11	14	0	4.61	0.51	1.35
PSME-PIPO/RHDI6	20	14	0	25.11	4.07	8.58
ROR, SISK, and UMP NF's		# Plots	**Length/Acre**			
BLUE BOOK P/A 1996	**DIACLS**	**N**	**MINLGTH**	**MAXLGTH**	**MEANLGTH**	**SDLGTH**
PSME-PIPO/RHDI6	0	14	652	2281	1094	454
PSME-PIPO/RHDI6	11	14	0	326	47	118
PSME-PIPO/RHDI6	20	14	0	326	70	139

Example of the DWD data used for the pipeline project and the PAG and P/A guide for SWO

5) Southwest Oregon Plant Association Group guide

Historically, vegetation classification has been the primary function of the ecology program. 2010 marked the final phase of classification, with the soon to be finished SWO PAG guide and productivity and DWD documentation. The productivity and DWD documentation will also be done for the 1996 published SWO Plant Association guide.

6) IMAP (Interagency Mapping and Assessment Project)/FVS (Forest Vegetation Simulator)/VDDT

Verification process continued, in cooperation with the Forest Silviculturist. 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.

Cooperation, Consultation, and Technology Transfer

1) Ashland Watershed Forest Resiliency Project

   Interdisciplinary participation on the Ashland Forest Resiliency Project, a fuels and forest health treatment proposal for the City of Ashland, Oregon's watershed, in collaboration with the City of Ashland and The Nature Conservancy (TNC).

2) Northern Spotted Owl Recovery Plan

   The Klamath Province working group was convened by the Northern Spotted Owl Recovery Plan to address ecological issues in dry forest ecosystems. Ecologists participated as members of this team tasked with analyzing and recommending management for the dry forest environments of the Klamath Province.

3) Port-Orford cedar Program

   Participated on the regional Port-Orford-cedar (and root disease) Technical Review Team.

4) Southern Oregon University Foundation

   The Ecology Program participated as active members of the University Foundation Academic Advisory Committee.

5) Applegate Landscape Project

   Collaborated with, and a team member of, the Regional Applegate Watershed Workshop. This was done in collaboration with the Bureau of Land Management, The Nature Conservancy, Applegate Partnership, and the Small Diameter Initiative, SOU, City of Ashland, the US Forest Service, and Fish and Wildlife Service.

Applegate Watershed Collaborative Field Trip

6) Continued work on preparing of a manuscript "Development and Growth of Old-Growth and Young Forests in Southwestern Oregon" with OSU's Dr. John Bailey and Dr. John Tappeiner.

7) Historic Legacy Data

   Collaborated with Dr. Thomas Atzet to interpret and preserve valuable historic legacy ecological data; 1965 – 1970 Siskiyou NF Air and Temperature data (Partlow Charts).

8) Answered many requests for data using our Ecology Plot Data database, for example, Port-Orford-cedar, Alaska yellow cedar, western redcedar, DWD, Basal Area, Site Index, etc.

9) Presenter at the Rogue Tree School ***Fire History of Southern Oregon and its Role In Forest Ecology,*** Southern Oregon University, Ashland Oregon - Sponsored by Oregon State University, Oregon Small Woodlands Association

10) Presenter at the ***Active Management Perspectives for Southwest Oregon*** - Solutions For Forests, Southern Oregon University, Northern Arizona University, University of Washington, Oregon State University, The Nature Conservancy, USFW

Ecologist Tom Sensenig leading 200 attendees on ***Solutions for Forests*** field day

11) Presenter of the talk ***Forest Ecology***, Small Forest Land Owners, Master Forest Land Steward. Oregon State University Auditorium, Jacksonville, OR.

12) Presenter of the talk ***Forest Ecology of the Klamath Province***, Cave Junction, OR. Sponsored by USDI, BLM, and National Park Service

13) Presenter of the talk ***Dry Forest and Dependent Wildlife*** and Participant**,** Bend, Oregon. Sponsored by Fire Learning Network, The Nature Conservancy, USFS

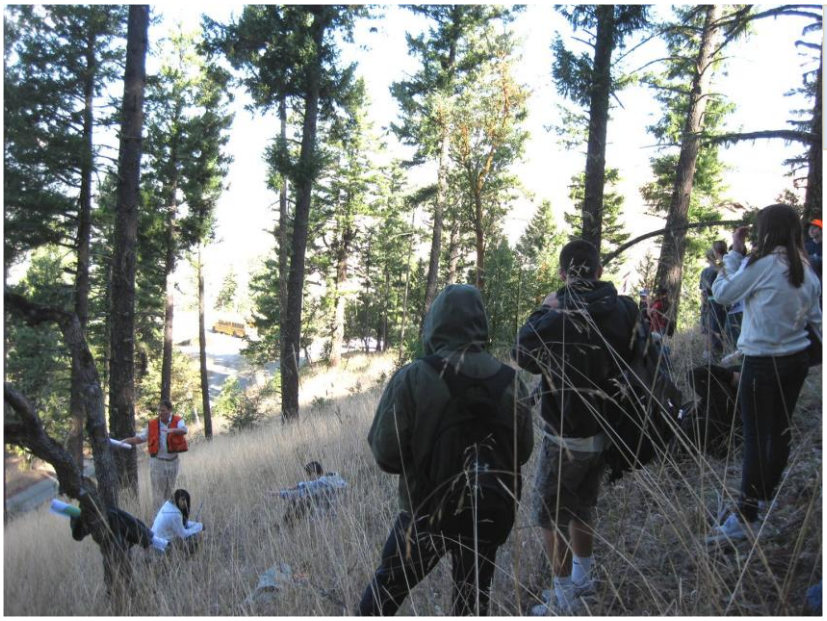
14) Presenter of the talk **Climate *Change and PNW Forests ecosystems,*** Medford, Oregon. Sponsored by Northwest Invertebrate Society

15) Presenter of the talk ***Climate Variation, Fire History, and Forest Habitat Development***. Oregon State University, Central Point, OR. Sponsored by the Small Woodland Owners Assoc., Oregon State University

16) Presenter of the talk ***Fire History of the Ashland Watershed and the Surrounding Mountains.*** Sponsored by the American Academy of Science and Southern Oregon University

17) Presenter of the talk ***Forest Ecology and Management Ecology of Southwest Oregon***, Sponsored by the Forest Land Steward Program and Oregon State University

18) Presenter of three classes: ***Forest Ecology and Succession,*** Crater High School, plus Field Trip ***-Demonstration of Forest Management***, Central Point, OR



Ecologist Tom Sensenig instructing 100 students on Crater High School Forestry Field Trip

19) World Forestry Institute Field trip to SW Oregon – Presentation and field trip related to fire in Southwest Oregon

Ecologist Tom Sensenig explaining fire history on the 2010 Southern Oregon Oak Flat Fire to World Forestry Institute International Fellows from Portland, OR

20) Presenter at the Oregon Forest Land Steward Program ***Forest Ecology and Management of Southwest Oregon***, Oregon State University

21) Presenter - ***Plant Association training for the Rogue River-Siskiyou NF***. Training for forest silviculturists and foresters

Ecologist Patricia Hochhalter conducting Plant Association Training for the Rogue River-Siskiyou NF silviculturists and foresters.

Program Goals FY2011 and beyond:

The upcoming goals for the Southwest Oregon Ecology group are rather ambitious. Some of the highlights are listed below:

1) Fire Ecology - Monitoring and re-measurement of the remainder of the 1987 fire transects that were started in FY10

2) Publication- Submit for publication ongoing research on stand development.

3) Potential Vegetation Mapping- Install a suite of potential vegetation ecology plots in at least six of the unrepresented areas.

4) Wilderness – Monitoring and plot re-measurements in Sky Lakes Wilderness.

5) Watershed Analysis- Analyze and complete the Watershed Framework Condition analysis now underway.

6) Partnerships- Continued participation in the Applegate Partnership and Collaborative Landscape projects.

7) Tech Transfer- Continue ongoing outreach program including the already committed presentations at the Oregon Caves National Monument, the Deer Creek Education Center of the Siskiyou Field Institute, Yale University Graduate School, and the National Convention of the Society of American Foresters.

8) Ecology – Continue "methods of ecological reference determination" in cooperation with Northern Arizona University's Ecological Restoration Institute, with Dr. Wally Covington, Flagstaff Arizona.

9) Ecological Classification- Complete the on-line version of the newly revised Plant Association Grouping (PAG) Publication

10) Consultation- Accommodate the numerous ongoing data analyses, data requests, and general forest assistance for the Rogue River-Siskiyou and the Umpqua National Forests.

Northwest Oregon Area Ecology Program (Area 6)
Mount Hood, Siuslaw, and 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, Nancy Sawtelle, Hugh Snook, Christopher Langdon, Linda Geiser, Doug Glavich, Nancy Lankford, Cheryl Friesen, Wesley Wong and Jenny Lippert

Projects

1) Interagency Mapping and Assessment Process (IMAP)

As part of an on-going NW Oregon ecology group project, ecologists and silviculturists are describing the range of current stand conditions (structure and composition) and common successional trajectories for forests across northwest Oregon.

This effort has become part of the regional IMAP project to develop successional models and planning tools for assessing future management scenarios. The purpose of IMAP is to model cumulative effects of treatments on the landscape, to predict future vegetation conditions and to model wildlife habitat. Using satellite imagery, forest inventory data and environmental layers, the dataset uses gradient nearest neighbor analysis (GNN) to map current conditions useful for mid- to large-scale assessments. IMAP uses state and transition models (VDDT) and Forest Vegetation Simulator (FVS) to model vegetation development through time.

- Current ranges of tree density, size class distribution, species composition, and snag and down wood densities have been summarized for the 13 vegetations types found in northwest Oregon. Vegetation types vary from series level designations such as Sitka spruce to sub-series level types such as cool western hemlock.

- In FY10, we completed mortality calibrations for each species in NW Oregon and finalized state and transition (VDDT) models.

- This information will feed into various efforts underway, such as Forest Plan Revision, 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), and is being used as a key component in a National Science Foundation grant with Oregon State University, the University of Oregon, and Pacific NW research station.

2) Special Habitats

- Oak/pine existing and historic vegetation mapping. The objective is to map existing and historic oak and pine habitats across federal lands in NW Oregon and describe stand types and range of environments in which they are found. Oregon white oak, black oak, and ponderosa pine habitats have decreased dramatically from historical conditions throughout their range. This component of biodiversity provides habitat to over 200 wildlife species. The project can identify restoration opportunities for Forest and BLM Districts. The existing habitats are being mapped by NW Habitat Institute; historic mapping is being completed using GLO (General Land Office) survey notes. In 2010, we contracted four digital orthoquads and four townships on the eastside of Mt Hood NF for existing and historic habitat mapping. With completion of these contracts, 14 paired map sets are available for eastside Mt Hood and Columbia River Gorge. This completes the mapping. A white paper with presentation at the Ecology Information Sharing Workshop is planned for 2011.

- Huckleberry monitoring. Huckleberries have cultural and socio-economic values to local Tribes for which the Forest Service has trust responsibilities The objective is to monitor response of huckleberry after a timber sale harvest treatment designed to enhance the huckleberry resource.

- The Willamette and Siuslaw NFs are working toward geodatabases of special habitats that include information on habitat type (wet, dry, or mesic meadows, rock outcrops, shrub openings, bogs, etc.). The Willamette NF and Eugene BLM have overlapping mapping using different techniques. Initial comparison in FY10 is being used to identify sites for field validation and mapping method comparison in FY11.

Doug Glavich sampling Siuslaw NF Drift Creek Alsea meadow restoration area

3) Post-fire effects in Northwest Oregon

- High elevation mountain hemlock forest 10 year response to the Charlton Fire. Twelve plots were established to monitor post-fire effects on coarse woody debris, tree, seedling and understory in this 10,000 acre fire in partnership with Oregon State University and the National Park Service. Analysis was undertaken to characterize coarse woody debris dynamics. A peer reviewed journal paper is expected in FY11.

- Natural tree regeneration and coarse woody debris dynamics 14 years post-fire in west Cascade forests. Analysis and a draft paper of fire effects in the Warner fire were completed in FY10 in partnership with the National Park Service. A peer reviewed journal article is expected out in FY11.


Warner plot 1998 (7 years post-fire)


Warner plot 2005 (14 years post-fire)

4) Seasonal burning effects on meadow vegetation

- Portions of a seasonally dry mid-elevation meadow on the south end of the Willamette NF were burned in spring and fall to explore seasonal fire effects on both native and non-native grasses and forbs.

- Analysis was completed in FY10 and a white paper is expected in FY11

5) The interactions of climate change, land management policies and forest succession on fire hazard and ecosystem trajectories in the wildland-urban interface (Willamette Valley, Oregon).

- National Science Foundation grant partnering with University of Oregon, Oregon State University, and Pacific Northwest Research Station

- Coupled model using biological changes due to climate change (MC1, global vegetation model), fire (modeled with FLAMMAP) and human decisions about oak restoration and fire risk management. Will use an agent based model (ENVISION) to track changes in the landscape under various climate and decision making scenarios

- Ecology input has been in the vegetation succession modeling and fire effects portion of the project

- Currently in year 2 of a 4 year project

Consultation (funded by others):

1) WyEast Restored – a vision for strategic restoration of the Mt Hood NF. Jeanne Rice provided input and feedback for this document being developed by the Gifford Pinchot Task Force. The document will be released in winter of 2011.

2) Climate Change – provide input on various projects (Forest vegetation strategy, NEPA, challenge cost share, etc).

3) Prescribed Fire in Wilderness—Interdisciplinary team core member on joint Deschutes/Willamette NF project to introduce prescribed fire in strategic locations to reduce future wilderness impact and increase firefighter safety. Consult on fire history, fire effects. Helped develop analysis to prioritize areas to introduce prescribed fire.

4) Tumblebug Fire Assessment-- Interdisciplinary team core member describing the effects of Tumblebug fire on resource objectives. Provided information on changed in fire regime condition class (FRCC) after fire.

5) Willamette Valley riparian vegetation typing: applied riparian vegetation classification developed for Riparian Plant Communities of Northwest Oregon: Streamside Plant Communities (McCain 2004) in cooperation with Oregon Natural Heritage Information Center for habitat ranking and mapping project in NW Oregon

6) Siuslaw NF interdisciplinary teams: Mary's Peak landscape analysis, Salmon River estuarine restoration, N Fork Siuslaw landscape analysis

7) Mt Hood Forest Plan monitoring report

8) Climate change – Forest liaison for Mt. Hood NF

9) Mt Hood NF Challenge Cost Share review committee

Cooperation and Technology Transfer

1) Plant Association Workshops—Using Plant Associations to Read and Manage Landscapes—5 trainings across the Willamette, Siuslaw and Mt. Hood NFs to discuss plant association concepts and highlight application in managing forested lands in the Coast Range, west Cascades and East Cascades.

Caption: Participants from the Mt. Hood Plant Association Training trying to determine plant association and management options

2) Climate Change Brown Bag—Willamette NF. Partnering with University of Oregon, described a process to downscale global vegetation models for use in looking at plant community changes through time.

3) Fire suppression alternatives for managing fire in forests: KVAL evening news segment—described the fire effects of the Scott Mt. fire on the Willamette NF, and the positive outcome of monitoring fire activity and evaluating natural resource effects.

4) Oregon Oak Communities Working Group Steering Committee Chairperson—partnering with private, United States Geological Survey (USGS), Bureau of Land Management (BLM), organized a field workshop discussing oak restoration treatment alternatives at North Bank Habitat Management Area

5) Ecology of the Forest—presentation to Willamette National Forest Leadership Team, Eugene BLM District Manager and new Willamette and Siuslaw Forest Supervisors, outlining the NW Oregon Ecology Program, projects and activities.

6) R6 Northwest Oregon Fuels Review—presentation on the fire regimes, fire effects and current status of NW Oregon,

7) Provincial Interagency Executive and Advisory Committee (PIEC) meeting—helped organize the spring meeting on oak restoration partnership opportunities.

8) NW Oregon Ecology Newsletter—FY10 Ecology newsletter outlining interesting ecological activities in NW Oregon (available on http://ecoshare.info)

9) Conference on managing for high quality early seral forest habitat (partnering with Cascade Center Adaptive Management Partnership): one day workshop for silviculturalists, wildlife biologists, planners, botanists, ecologists, and managers; our NW Oregon Ecology Info Sharing workshop for FY10

Program Goals FY2011 and beyond:

1) Prepare for large scale forest planning: complete input necessary to run IMAP scenarios for NW Oregon; test application of models in landscape planning projects.

2) Provide fire ecology information to our clients: continue technology transfer and consultation with fire regime condition class (FRCC) analysis process and implementation. Update analysis for NW Oregon using recent GNN vegetation maps.

3) Provide information on special habitats: oak pine, estuaries, alpine/subalpine meadows, and Coast Range meadows for forest level planning.

4) Train FS and BLM employees to understand and interpret plant communities in management for silviculture, wildlife, botany, and recreation. Broaden understanding of how potential natural vegetation models are integrated into planning and management models. In 2011, use the ecology plot data to relate elk forage to plant associations, plant association groups (PAGs); explore the use of the PAG model to show patterns across forests.

5) Hold an information sharing workshop on eastside Cascades ecosystem issues for NW Oregon.

6) Continue to provide support at the local and regional scales for FS and BLM.

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

Team: Tom DeMeo, Nikola Smith (time shared with Pacific Northwest Research Station), Sara Lovtang (time shared with Deschutes National Forest), Chris Ringo, Steffen Rasile, Melissa Whitman.

In order to meet growing needs for GIS support, technology transfer, and website development, the Ecology Tech Team was formed during FY10. Because of administrative changes at the Regional Office, we were told the Regional Ecosystem Office (REO) website would be phased out, so we made the transition to a new ecoshare site (ecoshare.info), incorporating state-of-the-art website technology. Our web manager, Steffen Rasile, ably manages the site, and is assisted by Chris Ringo and Sara Lovtang.

Chris' responsibility is GIS production (see following section). Chris worked for years in the Area 1 ecology program, and so has the distinct advantage of understanding ecology-related map products and the work we do. He is quickly gaining a reputation, not only here but in assistance to Region 1, of a first-rate GIS contractor.

Sara Lovtang assists the effort with metadata development, document writing, and website design. Current efforts include a better design for posting climate change projections and related maps on ecoshare. Another achievement during FY10 was development of a downloadable version of *Forested Plant Associations of the East Cascades*, suitable for personal data recorders. This serves as a prototype effort we hope to expand to other user-related guides, and was developed in direct response to a request from silviculturists. Because of demands for her time on the Deschutes National Forest (her duty station), we are likely to see reduced time with us and a more direct focus on Forest work.

Regional GIS project support (Chris Ringo)

- GIS support for R6 Climate Change Vulnerability Assessment (CCVA): processed 20+ GIS datasets of hydrologic and climate projections produced by Climate Impacts Group at the University of Washington for use in regional assessment; created map series of climate projections for use in CCVA.

- GIS support for Multiple Values and Threats Assessment project with the Western Wildlands Environmental Threat Assessment Center (WWETAC): processed 25+ GIS datasets for use in assessment; created 30 sets of random point samples for statistical analysis.

- Created Fire Regime Condition Class GIS layer for Region 6; developed maps, download files, and metadata of FRCC for all R6 Forests for posting to Ecoshare website.

- Developed application for editing MBS fire history polygons and creating stand year of origin layer.

- GIS programming in support of regional Plant Association Group (PAG) model.

- Created map atlas for inclusion in MBS Ecology plot database (MS Access).

- Posted data, maps, and metadata for Region 6 plant association groups, potential vegetation zones, and fire regime condition class to Ecoshare website.

Associate Ecologist Nikola Smith

Nikola joined the ecology program as an associate ecologist in May, 2010. Her time is shared between the ecology program (60%) and the Pacific Northwest Research Station (40%). Her projects include a carbon accounting analysis of national forests in Oregon and Washington, with an emphasis on comparisons by ecoregion and vegetation series. This work will be included in a regional guidance document on carbon considerations in management decision making, expected to be released soon. Nikola is also supporting the region's Climate Change Vulnerability Assessment effort, and serves on a sub-team focusing on projected socio-economic impacts of climate change in the Pacific Northwest and associated management recommendations. In a related project, she participates on a team led by Carol Aubry, geneticist on the Olympic National Forest. The team conducts vulnerability assessments of forest tree species and non-forested habitats on the Siuslaw, Willamette and Mt. Hood National Forests in northwest Oregon. This assessment follows a similar analysis that was recently completed for western Washington, and will be replicated throughout the region.

Nikola also supports the Regional Ecologist in building partnerships with other state and federal agencies, tribes, academic institutions and non-governmental organizations toward collaborative climate change efforts. This includes participation in meetings of the North Pacific Landscape Conservation Cooperative, a forum for identifying landscape-level needs and delivering climate change science to managers and decision makers. She has also represented the region at meetings of C3 (Climate Change Collaboration), a collective of federal agencies intended to better organize, integrate and focus government efforts addressing climate change in the Pacific Northwest.

By necessity Nikola has focused on supporting the climate change strategy and ecosystem services initiative, but also included in her program of work is development of data management, ecology, and field skills. We plan to involve her in the whiteheaded woodpecker habitat monitoring project this summer, our effort to assist wildlife ecologist Kim Mellen-McLean and colleagues in this important species habitat issue.

Cooperation and Technology Transfer

Fire Regime Condition Class (FRCC) trainings:

October 2009 Incorporating LANDFIRE also. TFM module, Bothell, WA
May 2010 TFM module, Bothell, WA
June 2010 FRCC training, Baker City

Useful publications:

Vegetation monitoring chapter of national wildlife habitat monitoring handbook (to be released in 2011)

Historic range of variation (HRV) examples in book resulting from 2008 Lansdowne HRV conference. In press.

FRCC work at multiple scales in conference proceedings, October 2010 IAWF conference. In press.

Program Goals FY2011 and beyond:

Meeting with Forest staff officers on program direction and support, March 2011. Significant support to climate change strategy: acting coordinator, scorecard implementation, synthesis document, carbon accounting paper, vulnerability assessment, and development of an adaptation strategy. Continue evaluation and support of Collaborative Forest Landscape Restoration Projects (CFLRP). Convert ecologist SCEP Amy Nathanson to a permanent position in the Southwest Oregon Area Program in 2011.