2017 Ecology Program Yearbook: Applying Science to Serve the National Forests

USDA Forest Service, Pacific Northwest Region

Cover photo: Mountain view on the Okanogan-Wenatchee National Forest. Photo courtesy of James Dickinson.

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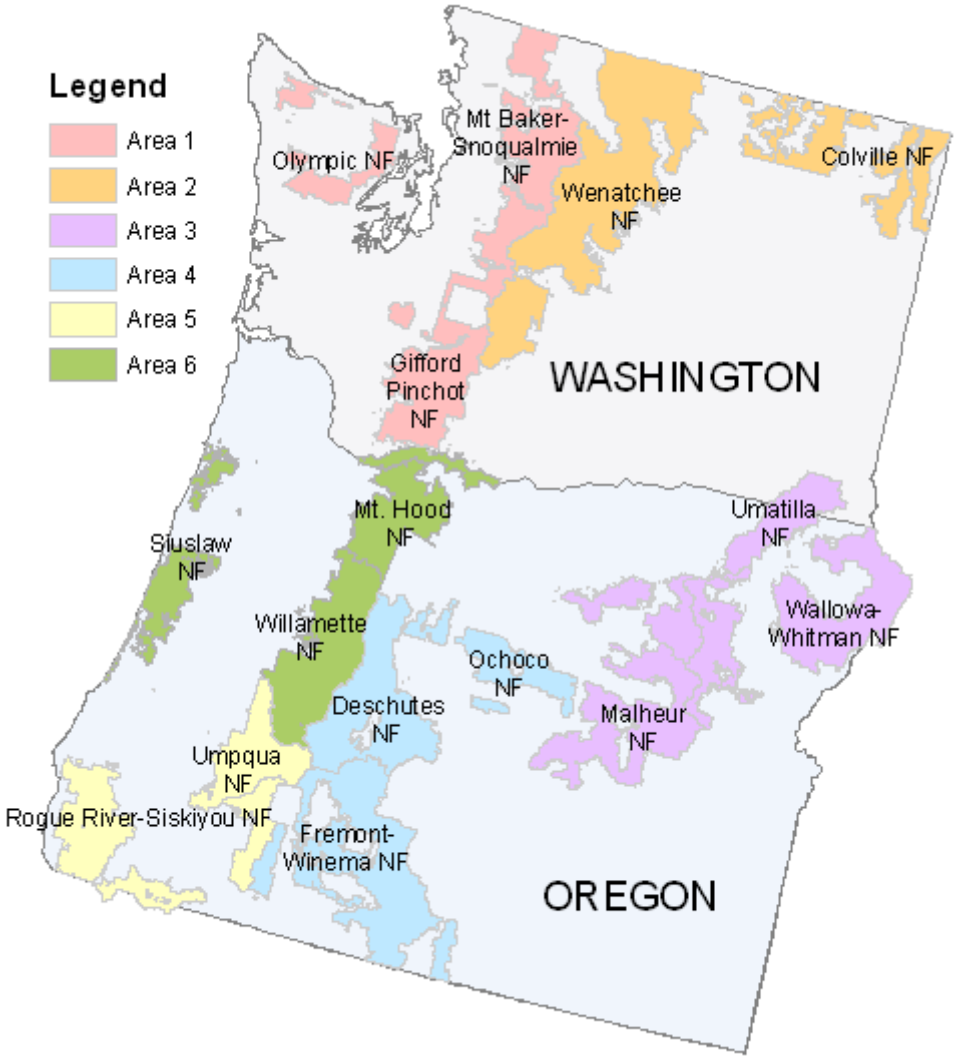
Region 6 Ecology Areas



The Ecology Program in the Pacific Northwest Region is organized into six areas comprised of two to three National Forests. Ecologists' annual program of work is drawn up jointly with the Forest natural resource staff officers in that area.

Ecology Program Mission Statement

The Ecology Program is a network of ecologists applying science to serve the National Forests in the Region through core services of landscape assessment, technology transfer, monitoring, mentoring, products (maps, publications, and databases), ecosystem services, support to planning, and science-management partnerships. The ecologists work as equal partners with other disciplines on an area basis to serve multi-forest needs and provide a landscape perspective. Ecologists are based on National Forests and are hence accountable to Forest leadership.

Ecology Program in the Pacific Northwest Region

The Regional Ecology Program today has a terrestrial emphasis and is organized by areas. Six areas cover the Region, as shown on page 2. Ecologists in these areas carry out a program of work crafted according to the National Forests' needs. Those ecologists covered by the program's Pacific Northwest regional commitment are indicated in the table below. The Ecology Program is well-integrated with other disciplines. One of our ecologist positions is also a half-time botanist and two others are half-time with the Forest Health Protection program. Other ecologists receive funding from fire, wildlife, and other disciplines.

Ecologists serving the six ecology areas:

Area	Area Name	Ecologists
1	**Western Washington**	Jessica Hudec, Kevin James (with Botany), Susan Piper (contact)
2	**Eastern Washington**	James Dickinson, Monique Wynecoop (with Fire)
3	**Northeast Oregon**	Area Ecologist Vacant (vice Sabine Mellmann-Brown), Michael Jennings (with Forest Health), Upekala Wijayratne, Vacant (vice Gunnar Carnwath)
4	**Central Oregon**	Gregg Riegel, Vacant (vice Beth Johnson), Vacant (vice Claire Addis), Mike Simpson (with Forest Health), Vacant (range ecologist)
5	**Southwest Oregon**	Bill Kuhn, Pat Hochhalter, Amy Nathanson
6	**Northwest Oregon**	Jane Kertis, Steve Acker, Doug Glavich (detailed in the vice Wes Wong position)

The program is built on a social contract between National Forest leadership, ecologists on the ground, and the Regional Office. The program of work is crafted annually with Forest Leadership Team and Staff Officer guidance. A high degree of accountability of performance is characteristic of the program.

Funding is anchored by a Regional Office Program Delivery commitment covering about 60 percent of the cost of each Area's ecology program. The remainder is made up of partnerships (such as Forest Health, Botany, BLM) and Forest contributions. **The Regional commitment has been a decision of Forest Supervisors collectively as an investment in the multi-Forest landscape perspective, continuity, and the many other services the ecologists provide.**

At the Regional Office, Tom DeMeo serves as the Regional Ecologist, and Nikola Smith as the Regional Ecosystem Services Specialist. Two student interns from De La Salle North High School, Ricardo Isais-Perez and Justin Thomas, work on data management on a part time basis. Nikola is funded in part by the

Regional ecology commitment, but also partly by the PNW Station, climate change funding, the planning staff, and State and Private Forestry.

Photo: Matt Busse (PNW Res. Soil Microbiologist) and Beth Johnson measure fuel loads in a control plot on the Repeated Fire Interval study in old growth ponderosa pine study at the Metolius Research Natural Area, Deschutes NF. The objectives of this study are to examine the effects of repeating fire return intervals at 5, 10, and 20 years that approximate the range of fire return on overstory composition, structure and spatial patterns, understory composition, density, cover, and biomass, and soil nutrients and litter and fuel loads. This long term cooperative research with PNW and PSW Research Stations began in 1991.

Core Services (the "Eight Pillars")

Landscape assessment

In 2017 we completed our update of the forest structural restoration needs based on ecological departure. This was published in 2015, in collaboration with The Nature Conservancy (Haugo et al. 2015). The 2017 update (DeMeo et al. in press) expanded the assessment area to include the entire forested portion of the Region (Figure). For each 5th field HUC in the Region, we can identify the acres in need of treatment, by potential vegetation type and seral stage. We can also identify the sequence in which they need to be treated. Finally, areas for successional development ("letting it grow back") can also be identified.

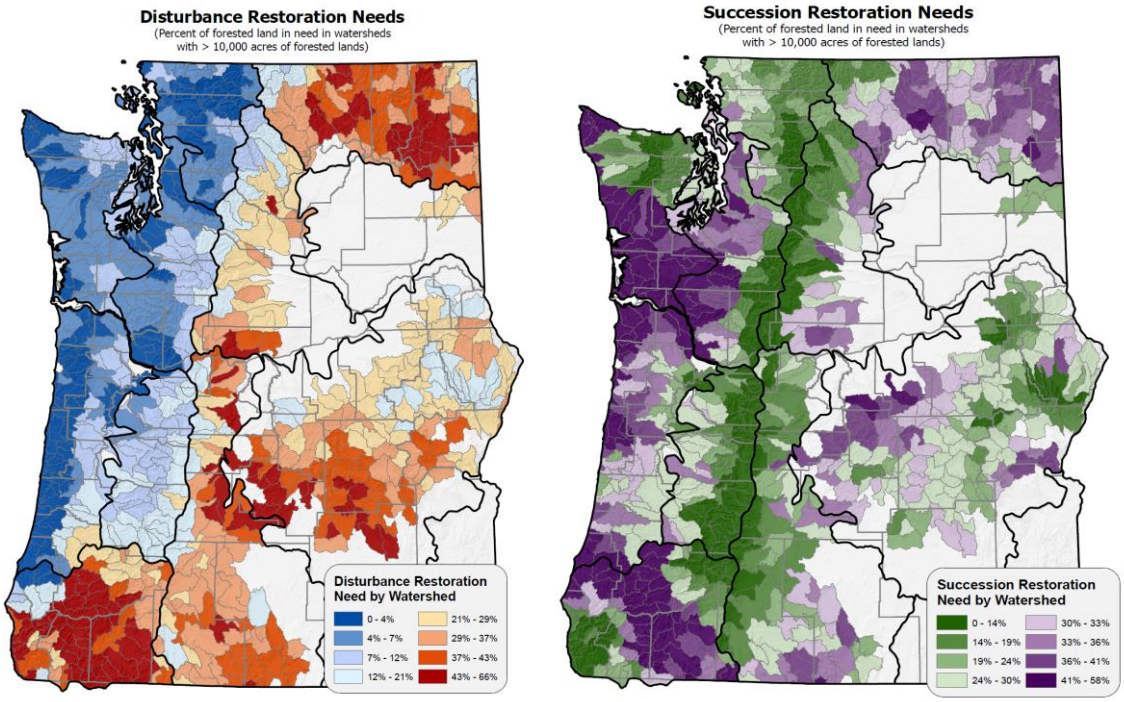


Figure. Forest structural treatment needs (left) and successional needs (right) for forested areas in Oregon and Washington. Work developed in cooperation with The Nature Conservancy and with Oregon State University.

In cooperation with The Nature Conservancy, the University of Washington, and the USFS Pacific Northwest Research station, we are also investigating ways to integrate ecosystem services into this departure mapping effort. The first step of this consisted of extensive literature reviews for carbon and water, in order to provide the scientific underpinning for the mapping. These were completed in June.

We were also instrumental in developing the Regional Forester's retreat in April on westside restoration, a more general workshop on westside restoration in May, and fire regimes of the Westside, also in May. Cheryl Friesen of the ecology program was instrumental in developing and facilitating these events. The fire regimes workshop was developed in cooperation with the Pacific Northwest Fire Science Consortium. In July we were tasked with developing Regional restoration summary needs for use by the Regional Forester. In addition to the forest structural needs presented above, we also worked with colleagues to compile treatment needs to reduce fuel hazards in the wildland urban interface, address insect and disease impacts, reduce invasive plants, and summarize aquatic restoration needs.

Technology Transfer

Trainings held by the program in 2017 included plant association trainings for the west side of the Cascades, and for the Coast Range. Two plant association trainings were also held on Forests in Northeast Oregon. We also conducted a number of webinars facilitated by Cheryl Friesen, including research Jeremy Fried's work on Biosum methodology.

Ecology contributed significantly to the westside restoration workshop held in Vancouver in May, including presentations by Amy Nathanson, Bill Kuhn, and Tom DeMeo, and organizing and facilitation by Cheryl Friesen. We also played a similar role at the Regional Forester's planning restreat on westside restoration on this topic in April.

A Landscape Pattern Tool was developed by ecologist Michael Jennings of the Northeast Oregon Area Ecology Program. This quantitative tool facilitates collaborative monitoring and management of landscape patterns. The Northeast Oregon area is also developing the use of drones for riparian monitoring.

Monitoring

Monitoring continues as a significant part of ecologists' workload in the Region. Ecology program ecologists are uniquely positioned to support the Forests in meeting their monitoring needs because of their strong scientific background, applied mission and outlook, and direction by Forest leadership to develop practical, effective monitoring efforts.

Ecologists can build on a legacy of past work in the program, notably from the legacy of ecologists such as Fred Hall, Jan Henderson, and Robin Lesher. Work at the Regional Office is ongoing to collate this work and post it online, making it available to all. The Western Washington ecology area collaborated with the Olympia office of the Pacific Northwest (PNW) Research Station to compile the Henderson/Lesher legacy ecology data into a single dataset.

We continue to support fire monitoring efforts. The Western Washington and Northwest Oregon Ecology Areas collaborated to develop a 40-year monitoring summary of the Rocky Fire that focused on post-fire management effects on basic succession. These Ecology Areas are also leaders in the Region on monitoring of huckleberry enhancement projects, in cooperation with the Cascade Forest Conservancy and Portland State University.

NE Oregon ecologists collaborated with the Blue Mountain Ranger District (Malheur NF) on meadow and riparian restoration, and also accomplished pre-treatment monitoring of riparian areas in East Fork Beech Creek and revisited East Fork Big Creek 1-year

Mentoring

Since 2011 we have been hosting student interns from De La Salle North High School in Portland. Students work one day per week, plus an additional Monday per month, for a total of five days per month. This is designed to teach them basic job skills and also technical skills useful for career development. In the ecology unit, students work on basic data management skills, such as scanning slides and photos, and developing associated Excel spreadsheets for metadata.

This school year our students are Ricardo Isais-Perez, a sophomore, and Justin Thomas, a freshman. They are processing Fred Hall monitoring datasets so that we can post them on line (ecoshare.info) for managers to use. This has begun and will be continually updated as more data are ready for posting. (See https://ecoshare.info/products/fred-hall-legacy-data/)

The Northeast Oregon Ecology Area mentored Presidential Management Fellow Carlyn Perovich, on detail from the Grand Mesa Uncompagre Gunnison National Forests during the summer. She assisted with field monitoring and other tasks.

Products (Maps, Publications, Databases)

The ecology mapping team (Jane Kertis, Mike Simpson, Pat Hochhalter, Amy Nathanson, Steve Acker, and Tom DeMeo) completed the first iteration of the new potential vegetation zone map for the forested areas of the Region (and also including the Northwest Plan area in northern California, the Modoc NF, and the Lassen NF). Plans are under way to complete the subzone map in 2018, and a draft GTR is beign developed. The team has done some excellent liaison work with ecologists in California, and has started discussions on a joint assessment of the natural range of variation. The program is delivering these products as part of the joint R5/R6 bioregional assessment, working with the direction of Regional planning analyst Max Wahlberg.

Western Washington

Presentations:
Hudec, J.; Tolfree, J. 2017. Huckleberry ecology and management strategy for Gifford Pinchot National Forest. Presented on separate occasions to Pinchot Partners, South Gifford Pinchot Collaborative Group, Yakama Nation, Cowlitz Tribe, two public meetings, and at the Westside Peer-to-Peer learning event.
James, K. 2016. Landscape restoration framework. Presented on separate occasions to forest leadership on MBS, forest leadership and staff on OLY, and Regional Office aquatic staff.

Publications:
Hudec, J.; Halofsky, J.E.; Peterson, D.L.; Ho, J.J. Climate change vulnerability and adaptation in southwestern Washington. PNW-GTR-xxx. Portland, OR: USDA, Forest Service, Pacific Northwest Research Station. xxx p. In review.

Hudec, J. Gifford Pinchot National Forest Huckleberry Management Strategy. Unpublished.

Eastern Washington

Presentations:

Wynecoop, M. 2017. Getting Back to Fire Sumêŝ: Exploring a Multi-Disciplinary Approach to Incorporating Traditional Knowledge into Fuels Reduction Treatments. Master's Thesis. Presented on separate occasions at the SW Fire Science Consortium, Tucson, AZ; Idaho President's Native American Advisory Council Meeting, Pendleton, OR; University of Idaho, Moscow, ID; and the NEW Forest Vision 2020 CFLRP Monitoring Committee Meeting, Colville, WA.

Publications:

Randall, J.; Schaaf, A.; Clark, J.; Dickinson, J. 2017. Identifying and extracting features from a lidar-derived DEM. RSAC-10113-RPT1. Salt Lake City, UT: U.S. Department of Agriculture, Forest Service, Remote Sensing Applications Center. 8 p.

Okanogan-Wenatchee Forest Restoration Strategy; Quality Management Plan. A collaborative effort between the Okanogan-Wenatchee National Forest, The Nature Conservancy, Wenatchee Forestry Sciences Lab, and the Washington Conservation Science Institute.

Northeast Oregon

Churchill, D.J., G.C. Carnwath, A.J. Larson, S.A. Jeronimo. 2017. Historical Forest Structure, Composition, and Spatial Pattern in Dry Conifer Forests of the Western Blue Mountains, Oregon. Gen. Tech. Rep. PNW-GTR-956.

Dwire, K.A., S. Mellmann-Brown, J.T. Gurrieri. 2017. Potential effects of climate change on riparian areas, wetlands and groundwater-dependent ecosystems in the Blue Mountains, Oregon, USA. *In* Halofsky, J.E. and D.L. Peterson, eds., Climate Change Vulnerability and Adaptation in the Blue Mountains Region. Gen.Tech. Rep. PNW-GTR-939.

Heidel, B., W. Fertig, S. Mellmann-Brown, K.E. Houston, K.A. Dwire. 2017. Fens and their rare plants in the Beartooth Mountains, Shoshone National Forest, Wyoming. Gen. Tech. Rep. RMRS-GTR-369.

Kerns, B.K., D.C. Powell, S. Mellmann-Brown, G. Carnwath, J. Kim. 2017. Effects of climate variability and change on upland vegetation in the Blue Mountains. *In* Halofsky, J.E. and D.L. Peterson, eds., Climate Change Vulnerability and Adaptation in the Blue Mountains Region. Gen. Tech. Rep. PNW-GTR-939.

Wijayratne, U.C. and S. Mellmann-Brown. 2017. Assessing the impacts of ungulate grazing on biological soil crusts using long term grazing exclosures. Presentation, Ecological Society of America National Conference: August 1-5, 2017, Portland, Oregon.

Jennings, M. and A. Stratton, 2017. The Walter Climate Diagram Arc GIS Tool. Poster presentation, Northwest Climate Conference: October 10-11, Tacoma, Wash.

Jennings, M. 2017. Climate change and ecosystem composition across large landscapes. Oral presentation, Ecological Society of America National Conference: August 1-5, 2017, Portland, Oregon.

Central Oregon

Presentations:

Pellant, M.L, D.A. Pyke, J. Herrick, P.L. Shaver, F.Busby, G. Riegel, N. Lepak, B.A. Newingham, E.Kachergis, and D. Toledo. 2017. Status and Updates to Interpreting Indicators of Rangeland Health. Interpreting Indicators of Rangeland Health-Version 5. Soc. For Range Manage, 70th Annual Meeting, Jan. 29-Feb. 2, St. George, UT.

Simpson, M. and Wing, B. Using Lidar In Forest Health Project Planning: A Case Study from the Ochoco National Forest on Identifying the Abundance of Large Trees, Managing Stand Densities to Reduce the Risk of Bark Beetle Caused Mortality, and Detecting Root Disease. Presentation at the National Silviculture Workshop Flagstaff AZ. 07/18/2017.

Simpson, M. Potential Vegetation Mapping based on GNN 1984-2012 Time Series Imputation of FIA/CVS Plots. Presentation at R6 Regional Ecology Meeting Wenatcheee WA 10/17/2017.

Publications:
Case, M.J., B.K. Kerns, J.B. Kim, M. Day, A. Eglitis, M. L. Simpson, J. Beck, K. Griener, G. Riegel In Press. Halofsky, J.E. and D.L. Peterson. In: Climate Change Vulnerability in Central and South Central Oregon. Gen. Tech. Rep. PNW-GTR-XXX. *In Press*.

DeMeo, T., R. Haugo., C. Ringo, J. Kertis, S. Acker, M. Simpson, and M. Stern. Expanding Our Understanding of Forest Structural Restoration Needs in the Pacific Northwest, USA. 31p. Northwest Science. *Accepted.*

Johnson, E. 2017. Riparian Ecological Status Monitoring Reports for the Fremont-Winema and Ochoco NF's.

Pellant, M.L, D.A. Pyke2, J. Herrick, P.L. Shaver, F. Busby, G. Riegel, N. Lepak, B.A. Newingham, E.Kachergis, and D. Toledo. Interpreting Indicators of Rangeland Health. Interpreting Indicators of Rangeland Health-Version 5. USDI Bureau of Land Management, Denver, CO. ITR XXXX-X. *In Review.*

Riegel, G.M., R.F. Miller, C.N. Skinner, S.E. Smith. C.A. Farris, and K.E. Merriam. Northeastern Plateau Bioregion. In: J. van Wagtendonk, N.G. Sugihara, K.E. Shaffer, J. Fites-Kaufman, and A.E. Thode, editors. Fire in California's Ecosystems, 2nd., Univ. of Calif. Press, Berkeley. *In Press*.

Southwest Oregon

Presentations:

Nathanson A. 2017. West Side Restoration Workshop. May, 2017. "Umpqua Vegetation Management Strategy."

Kuhn B. 2017. West Side Restoration Workshop. May, 2017. "Rogue Basin Cohesive Forest Restoration Strategy."

Northwest Oregon

Presentations:

Fire in the Pacific Northwest—Past, Present and Future, May 2017 Conference:

1. "Ecology: Effects of Fire on Vegetation."
2. "Restoring mixed severity fire regimes on the Willamette National Forest—opportunities and challenges"

Ecological Society of America 2017 Annual Meeting: "Classification and assessment of riparian ecosystems in northwest Oregon for restoration planning."

SWF Collaborative and Rigdon IDT meetings:

1. "Fire Ecology of the Rigdon Landscape"
2. "A Landscape Assessment Process"
3. "Natural Processes—Effects on Ecosystem Elements, Flows, and Function in the Rigdon Landscape"

Publications

Spies, T, P. Hessburg, C. Skinner, K. Puettmann, M. Reilly, R.J. Davis, J. Kertis, J. Long. 2017 (in review). Old growth, disturbance, forest succession and management in the area of the Northwest Forest Plan. In: Synthesis of Science to Inform Land Management within the Northwest Forest Plan Area: PNWGTR

Regional Office

Publications:

DeMeo, T., R. Haugo, C. Ringo, J, Kertis, S. Acker, M. Simpson, and M. Stern. Northwest Science in press. Refining our understanding of forest structural restoration needs in the Pacific Northwest, USA. Northwest Science. 31 p. *Accepted.*

Deal, Robert; Fong, Lisa; Phelps, Erin, tech. eds.; Weidner, Emily; Epstein, Jonas; Herbert, Tommie; Snieckus, Mary; Smith, Nikola; Ellersick, Tania; Arthaud, Greg. 2017. Integrating ecosystem services

into national Forest Service policy and operations. Gen. Tech. Rep. PNW-GTR-943. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 87 p.

Deal, Robert L.; Smith, Nikola; Gates, Joe 2017. Ecosystem services to enhance sustainable forest management in the US: moving from forest service national programs to local projects in the Pacific Northwest. Forestry: An International Journal of Forest Research. : 1-8. https://doi.org/10.1093/forestry/cpx025.

Ecosystem Services

The Pacific Northwest Region Ecosystem Services program is based in Ecology and is jointly funded and designed with State and Private Forestry, the Region 6 Climate Change Program, and the PNW Research Station. Examples of work related to each deputy area are provided below.

Applying Ecosystem Services to Project-Level Planning: Supported interdisciplinary teams to integrate ecosystem services into NEPA processes including "pre-NEPA" assessments, development of Purpose and Need statements and design of management actions needed to support interdisciplinary goals. Provided workshops, presentations, document content and review to highlight connections between landscape conditions, goods and services provided by planning areas, and management needed to sustain functions that meet ecological, economic and social goals. Projects include:

1) cross-jurisdictional restoration in the Applegate Adaptive Management Area, in partnership with the Medford District BLM and private landowners
2) restoration needs assessment in the Elk River watershed on the Powers Ranger District of the Rogue River-Siskiyou National Forest
3) assistance to the Mt. Adams Ranger District of the Gifford Pinchot National Forest to engage in collaborative planning in Wind River
4) development of communication tools highlighting ecosystem services provided by floodplain restoration on the McKenzie River Ranger District of the Willamette National Forest
5) integration of ecosystem services into project scoping related to recreation and post-fire recovery on the Bend-Fort Rock Ranger District of the Deschutes National Forest

Support for Resource Planning and Monitoring*:* Collaborating with the Regional Social Scientist to address socio-economic components of Northwest Forest Plan monitoring, as well as social and economic sustainability under the 2012 Planning Rule. Provided ecosystem services technical assistance for the Bioregional Assessment.

Climate Change Vulnerability Assessments*:* Led the ecosystem services team for three vulnerability assessments. Completed edits of the South Central Oregon and Southwest Washington assessments for publication. Gathered data for the Southwest Oregon assessment.

Watershed Investment Partnerships and Conservation Finance*:* Supporting engagement of utilities in stewardship of forest lands in source watersheds. Projects include:

1) Pure Water Partners program designed by the McKenzie Collaborative. This partnership is convened by Eugene Water and Electric Board and the Willamette National Forest to address management of the McKenzie watershed, which provides Eugene's drinking water. The collaborative is taking an All Lands approach to sustain function on public and private lands in the McKenzie. Worked to develop a voluntary incentive program for private landowners to promote protection and restoration of high quality riparian areas. The collaborative is also supporting stewardship contracting on the Willamette National Forest to sustain the resilience of

the McKenzie headwaters and generate retained receipts for the Pure Water Partners fund. Completed pilot phase and applying lessons learned to implementation.

2) Outreach to other Willamette Basin utilities with a focus on the Clackamas and Santiam watersheds.
3) Participation in the Green-Duwamish Urban Waters Federal Partnership and outreach to Tacoma Public Utilities to explore partnership opportunities on the Mt. Baker-Snoqualmie National Forest.

National Ecosystem Services Strategy Team: Member of a core team established by the Associate Deputy Chiefs to develop cohesive national strategy, policy and implementation plans for ecosystem services programs across Forest Service deputy areas. Organized and facilitated monthly webinars on focused topics. Participated in strategic planning with leadership in the Washington Office. Designated as team lead to provide support to the national Conservation Finance program.

Support to Planning

In Southwest Oregon, ecologists have assisted the Umpqua Forestry Coalition as the Calf-Copeland restoration project has evolved, and helped the planning effort for the Stella project. Western Washington ecologists helped set up and lead an open house on the Dungeness Watershed action plan. Eastern Washington is implementing lessons learned from planning work on broad-scale projects in the USFS Northern Region.

Northwest Oregon Area has played a significant leadership role Regionally in riparian management, by defining what the natural range of variation looks like for riparian ecosystems. Ecologist Steve Acker also provides leadership on the technical aspects of DecAID, the Decayed Wood Advisor, a key component of project plans throughout the Region.

Partnerships

Collaborative Forest Landscape Restoration Program (CFLRP)

Ecologists continue to serve the five CFLRP projects through monitoring work and support to citizen monitoring efforts. The projects are Northeast Washington Vision 2020 (Colville NF), the Southern Blues (Malheur NF), Lakeview Collaborative (Fremont-Winema NF) and Tapash (Okanogan-Wenatchee NF). Ecologists in the areas where these projects occur serve the CFLRP collaboratives with monitoring and planning advice. Tom DeMeo serves at the Regional level as part of a three-person team facilitating the CFLRPs Regionally. (The others are assistant natural resources director Carol Boyd and Regional fuels planner Dana Skelly.) Additionally, we participated in the national review of the Southern Blues and Tapash CFLRP projects (with ecologist Kevin James substituting for Tom DeMeo).

A workshop to review CFLRP monitoring Region-wide is planned for late April 2018 in Bend or Hood River, under the leadership of Tom DeMeo and Lindsey Buchanan, national CLFRP coordinator.

The Nature Conservancy (TNC)

In 2017 we continued to strengthen our partnership with The Nature Conservancy on multiple fronts. At the request of Forest Supervisor Jerry Ingersoll (at the time acting Natural Resources Staff Director in the Regional Office), we expanded our natural range of variation (NRV) departure analysis to include all forested areas in the Region. This expansion to include the full area west of the Cascade Crest was timely, since it helped to inform discussions on what restoration should look like on the west side, a key topic at the Regional Forester's retreat on westside restoration in April, and at the follow up technical workshop in Vancouver in May. This information was also used in our TNC collaboration as we provided information to the Washington Department of Natural Resources, as they informed the Washington legislature regarding a forest health bill for the eastside.

Finally, we cooperated with TNC and the University of Washington School of Forest Resources in a student project to identify the ecosystem services values of carbon and water provided by forests. This took the form of extensive literature reviews conducted by a class at the university. Results were presented in June at the Pacific Northwest (PNW) Research Station.

Stakeholder/Collaborative Support

In addition to working with the five CFLRPs in the Region, ecologists assist the "small c" collaboratives with support on monitoring, landscape assessment, and planning. A significant amount of ecology support goes into collaboration with the tribes in the Region. In 2017 the program worked with the Cowlitz and Confederated Tribes of the Umatilla on management and monitoring of traditional foods, such as huckleberries. Monique Wynecoop is serving as liaison to the Spokane and Confederated Colville tribes in Eastern Washington, notably on fire management issues.

Partnerships with Other Science Partners

We continue to grow our partnerships with the PNW Research Station. Scientists including Mary Rowland and Steve Wondzell from the Starkey and Corvallis Labs participated in our annual meeting in Joseph, and Michelle Steen-Adams, Rebecca Flitcroft, and Peter Singleton (from the Portland, Corvallis, and Seattle Labs, respectively) joined us for the annual meeting in Wenatchee. Bringing together the strengths of our FS R6 Ecologists and the Station is leading to richer dialogue and broader understanding of our respective programs of work.

Pacific Northwest Region Ecology Program

Photo: Volunteer helping set up rapid response fire effects (FFI) plots ahead of the North Star Fire on the Colville National Forest as part of the Northeast Washington Forest Vision 2020 CFLRP Fire effects/Tribal Values Monitoring Project. Photo courtesy of Monique Wynecoop.

Western Washington Ecology Program (Area 1)

Gifford Pinchot, Mount Baker-Snoqualmie, and Olympic National Forests

Program Priorities

In 2017, Natural Resource Staff Officers, Area Ecologists, and the Regional Ecologist agreed on the following priorities for Western Washington:

- Monitoring: Compilation of legacy ecology plot data to deliver a single, complete dataset of ecology plot monitoring for each Forest.
- Support to planning: Landscape analysis and assessments that inform broad-scale restoration strategies by helping prioritize areas where active management is appropriate for restoration and guiding treatment design. Late-successional reserve and early seral habitat management are of particular interest.
- Special forest products: Habitat suitability analyses, literature syntheses, and management strategies for special forest products including huckleberry, salal, and beargrass.
- Information transfer: Plant association trainings, climate change education, presentations, and white papers on special topics of interest.
- Collaboration: Work with partners and collaborative groups on project planning, monitoring, and public outreach.

Area 1 Ecology Program Team:

Jessica Hudec

Kevin James

Susan Piper

Accomplishments

Monitoring and collaboration

- Partnered with PNW-Olympia to compile MBS and OLY legacy ecology data from multiple sources into a single dataset. Initial results from this work identified plots that have been sampled numerous times in the past 30 years and may be appropriate for continued monitoring and trend analysis.
- Drafted a 40-year Rocky Fire monitoring summary with Northwest Oregon Ecology that focused on post-fire management effects on basic succession.

Monitoring, special forest products, and collaboration

- Compiled information on all known huckleberry enhancement projects and associated monitoring in Western Washington and Northwest Oregon.
- Worked with Cascade Forest Conservancy and Portland State University to develop and implement a monitoring program that assesses huckleberry treatment effectiveness and identifies influential factors on huckleberry abundance and plant vigor.

Support to planning and collaboration

- Integrated 22 resource and policy metrics into a spatially explicit hierarchical analysis to assess current conditions on the MBS at the subwatershed scale. Results were used to identify active restoration needs and prioritize out-year forest management planning efforts in areas where integrated management could be undertaken to help restore ecosystem functions.
- Started revision of the 2001 MBS LSR Assessment, focusing on expanding the natural range of variability.
- Participated on a WO Collaborative Forest Landscape Restoration Program review team for three National Forests in Region 6. Reviewed monitoring plans and implementation for each CFLRP project.
- Initiated a landscape assessment project with GP South Zone IDT and South GP Collaborative Group for the Wind River watershed that aims to

Continued from previous page

develop desired conditions in two large planning areas by combining natural resource and human values.
- Worked with Conservation Northwest and other partners to compose a summary memo with direction on how to develop a collaborative approach to defining restoration needs, building methodologies, and initiating a demonstration project on the MBS. Memo was shared with MBS Forest Leadership with the intent of incorporating aspects into the forest-wide restoration strategy.
- Worked with NW Oregon Ecology program and East Cascades Oak Partnership on eastside oak/pine literature review, strategic management, and mapping.
- Team lead and organizer for public open house for Dungeness watershed action plan.
- Forest representative for multi-agency (FS, NPS, WDFW) mountain goat management plan and DEIS on Olympic Peninsula.

Special forest products and collaboration

- Completed draft of Gifford Pinchot Huckleberry Management Strategy with Pinchot Partners collaborative group.
- Drafted huckleberry habitat suitability map. Oversaw field validation of habitat suitability factors on the GP by Cowlitz Tribe.
- Worked with USGS-Glacier and Yakama Nation to assess huckleberry vulnerability to climate change.
- Shared results of huckleberry work to date with PNW-Olympia for use in research efforts on climate change effects on edible shrubs. Monitoring will provide information for PNW research and contribute to plant phenology database.

Shared results of huckleberry work to date with NE Oregon Blue Mountains Restoration Team for use in their efforts to address traditional cultural foods with the Confederated Tribes of the Umatilla.

Regional Wildlife Ecologist Barb Garcia, and Cowlitz Indian Tribe natural resource technician differentiate among huckleberry species at the Cascades plant association training.

Information transfer and collaboration:

- Climate change coordinator for GP and MBS. Co-led efforts to compile Southwest Washington Climate Change Vulnerability Assessment, which is in final stages of review, with PNW-Seattle and University of Washington.
- Co-led plant association trainings in the Cascade Range and Coast Range with Northwest Oregon Ecology program.
- Presentations at Westside Restoration Peer to Peer Workshop.

Products, Papers, and Publications

Presentations

- Hudec, J.; Tolfree, J. 2017. Huckleberry ecology and management strategy for Gifford Pinchot National Forest. Presented on separate occasions to Pinchot Partners, South Gifford Pinchot Collaborative Group, Yakama Nation, Cowlitz Tribe, two public meetings, and at the Westside Peer-to-Peer learning event.
- James, K. 2016. Landscape restoration framework. Presented on separate occasions to forest leadership on MBS, forest leadership and staff on OLY, and Regional Office aquatic staff.

Publications

- Hudec, J.; Halofsky, J.E.; Peterson, D.L.; Ho, J.J. Climate change vulnerability and adaptation in southwestern Washington. PNW-GTR-xxx. Portland, OR: USDA, Forest Service, Pacific Northwest Research Station. xxx p. In review.
- Hudec, J. Gifford Pinchot National Forest Huckleberry Management Strategy. Unpublished.

Responding to Future Needs:

Many priorities from 2017 will be carried over into 2018 as we continue to compile legacy monitoring data, develop landscape analyses in support of restoration planning, update components of huckleberry management and monitoring strategies, and publish the report on climate change vulnerability and adaptation in southwestern Washington. We aim to develop an annual monitoring report for Western Washington and to draft a white paper on Late Successional Reserves that reconciles Northwest Forest Plan direction with current science and identifies opportunities for fostering restoration in current LSRs.

Eastern Washington Ecology Program (Area 2)

Okanogan Wenatchee and Colville National Forests

Program Priorities

The Eastern Washington Zone is committed to supporting the Colville and Okanogan-Wenatchee National Forests.

- Coordinate and improve upon monitoring for CFLN projects.
- Re-establish range monitoring program
- Support Okanogan-Wenatchee NF planning efforts and navigating through Northwest Forest Plan and ESA requirements.
- Support decision support tools for both forests in restoration and strategic planning.
- Introduce lessons learned during large scale NEPA planning efforts from Region 1.

Area 2 Ecology Program Team:

James Dickinson, Landscape Ecologist

Monique Wynecoop, Fire Ecologist

Fire Ecologist, Monique Wynecoop (left) with University of Idaho Professor Penny Morgan (far right) and her graduate student/field technician (middle) identify understory plant species response to the 2015 North Star Fire on the CNF.

Accomplishments

The eastern Washington Area Ecology team had a productive year supporting the Colville (CNF) and Okanogan-Wenatchee National (OWN) Forests. Emphasis was placed on the 2017 priorities of building relationships, introducing principles of landscape ecology to managers, developing projects to demonstrate those principles in disturbance prone landscapes, supporting ongoing management priorities, and creating partnerships to address new issues.

The EWZ is a geographically large area encompassing different vegetation types and disturbance histories, yet significant overlap occurs between the two forests.

On the CNF, the team is developing a common framework for communicating across these areas. This summer, three new fire/fuels monitoring projects have been implemented with Eastern Washington University, University of Idaho, and the Spokane Tribe that are helping us determine the effectiveness of our fuel treatments within the CNF. This summer, Monique has taken the instructor training to initiate a FireWorks (https://www.fs.fed.us/rmrs/tools/fireworks-curriculum-and-trunk-materials) education program and trunk on the CNF that will be tiered towards the NE WA region and provide the tools necessary to educate the public of all ages about the fire ecology and the role of fire on landscape. She is also working with the Spokane Tribe Fire Prevention/Fuels program coordinators to develop a lesson specific to the Spokane Tribe's use of fire on the landscape.

All projects meet our goals of building relationships while also addressing our agency partner's monitoring questions about the effectiveness of USFS fuels reduction treatments within the CFLRP project area.

Participating in the Washington Office Review of the CFLR's in Region 6, also developed some common understanding, relationships, and opportunities to work towards larger monitoring and trend assessment opportunities within the zone.

Working across multiple scales and disciplines is a cornerstone of landscape ecology. To help incorporate this skillset requires development of modular tools, methods, and analyses that can be readily shared when they apply. One process that we developed was a *QA/QC* methodology for use with photo interpretation

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of large landscapes, which brings the ability to compare contemporary data to historical sources at low costs.

We helped to coordinate and ensure that updates to the OWF Late Successional Reserve Assessments addressed landscape issues; within stand gaps and clumps, dynamic structural conditions, fire within and without LSRs. Utilizing landscape analyses developed by the PNW Research Station and the OWF, a team of technicians has developed a multi-resource assessment. One such assessment covers ~75,000 acres, addresses 14 terrestrial structural and disturbance variables, 278 miles of road, and 199 culverts. We also analyzed impacts to aquatic and hydrologic systems. This analysis effort resulted in updates to tools and scripts to use modern data and analysis methodologies.

The team has several projects that demonstrate the role of scale and processes in these ecosystems. We worked with RSAC to develop a standard method of collecting road features from lidar data. We also acquired high resolution stereo-imagery for short term effects and long term monitoring across a wildfire burn area. This imagery is being used to create a point cloud that functions like lidar. We are currently monitoring the survival of trees in the same fire area, in order to describe to management the post fire needs on large landscapes.

The zone has three formal collaboratives influence the management needs and approaches. We have worked to support projects in all three zones via public interactions, project analysis and planning, and workgroup participation.

The team has developed several valuable research and management partnerships. This year we worked with the Spokane and Colville Confederated tribes and the Warm Springs Confederated tribes. We (specifically Monique) are developing a role, in collaboration with the Northern Rockies Fire Science Network and the Northwest Fire Science Consortium, as a tribal liaison with the NE Washington tribes. In addition, we have helped to develop some new tools and approaches in restoration planning with Region 1 for landscape level analysis and NEPA planning. Other projects include Joint Fire Science research projects with University of Washington and PNW researchers, riparian reference conditions with TNC, and insect vulnerabilities and effects with Forest Health Protection. In addition, we are working with the NPS Lake Roosevelt Recreation Area to develop landscape visualization tools for communication of management actions.

Mountaintop view on the Okanogan-Wenatchee NF, photo taken by James Dickinson

Products, Papers, and Publications

Presentations

Wynecoop, M. 2017. Getting Back to Fire Suméŝ: Exploring a Multi-Disciplinary Approach to Incorporating Traditional Knowledge into Fuels Reduction Treatments. Master's Thesis. Presented on separate occasions at the SW Fire Science Consortium, Tucson, AZ; Idaho President's Native American Advisory Council Meeting, Pendleton, OR; University of Idaho, Moscow, ID; NEW Forest Vision 2020 CFLRP Monitoring Committee Meeting, Colville, WA.

Publications

Randall, J.; Schaaf, A.; Clark, J.; Dickinson, J. 2017. Identifying and extracting features from a lidar-derived DEM. RSAC-10113-RPT1. Salt Lake City, UT: U.S. Department of Agriculture, Forest Service, Remote Sensing Applications Center. 8 p.

Okanogan-Wenatchee Forest Restoration Strategy; Quality Management Plan. A collaborative effort between the Okanogan-Wenatchee National Forest, The Nature Conservancy, Wenatchee Forestry Sciences Lab, and the Washington Conservation Science Institute

Responding to Future Needs

Monitoring – Developing robust and easily accomplished monitoring at both project and landscape scales. Learning to utilize citizen science monitoring for long term buy-in and applicability.

Landscape Assessments – Incorporating new knowledge and new tools to accomplish broad ecosystem resilience while providing for social and economic needs.

Technology Transfer – Working with our different collaborators (research, tribal, state) to bring new ideas and new tools to address barriers and knowledge gaps.

Northeast Oregon Ecology Program (Area 3)

Malheur, Umatilla and Wallowa-Whitman National Forests

Program Priorities

The Northeast Oregon Ecology Team meets annually with all natural resource staff officers and other natural resource specialists to discuss program priorities, respond to assistance requests from Forest units, and to jointly build the annual program of work.

In 2017, we adjusted our workload mid-year after Sabine Mellmann-Brown moved to a position in Montana, and welcomed Carlyn Perovich–a Presidential Management Fellow from the Grand Mesa, Uncompahgre and Gunnison National Forests–into our team for the field season. We continued long-term vegetation and habitat monitoring, provided field visit support to specialists, and managed ecology legacy data. In addition, we worked on the following program priorities:

- Support the Forest Plan Revision Team with analysis products and expert knowledge as requested by our Forest Supervisors.
- Support Collaborative Forest Landscape Restoration (CFLR) on the Malheur National Forest with monitoring and tool development
- Provide assistance to Interdisciplinary Teams for Allotment Management Plan Revisions.
- Support riparian management efforts by providing expert knowledge to forest collaborative groups and initiating a literature review and white paper on selected riparian management questions.
- Assist in developing the silviculture needed to meet restoration needs by working closely with the Area Forests.

Area 3 Ecology Program Team:

Vice Mellmann-Brown- vacant

Michael Jennings, PhD

Upekala Wijayratne, PhD

Vice Carnwath - vacant

Accomplishments

- Developed a technical proposal, secured funding, and completed a quantitative tool for collaborative monitoring and management of landscape patterns. The Landscape Pattern Tool can be applied to any area of interest in the world and allows for detailed measurement of landscape changes over time using remotely sensed and field plot data. Release is expected in January 2018
- Initiated literature review and synthesis regarding management of riparian corridors to assist with collaborative process and consultation. Modeling the relationship between forest stand structure and snowpack duration under climate change.
- Tested riparian monitoring with an "Unmanned Aerial Vehicle" (UAV), also known as a "drone" on Pine Creek to evaluate cost-effectiveness and general feasibility. Results were positive: our longer term goal is to operationalize this tool.
- Established GLORIA (Global Observation Research Initiative in Alpine Environments) plots in advance of planned 2018 field data collection in collaboration with members from the North American GLORIA Chapter. These are the first such plots established in the Northwest.

Plant association training on La Grande RD, Wallowa-Whitman NF

- Collaborated with Blue Mountain Ranger District (Malheur NF) on meadow and riparian restoration. Accomplished pre-treatment monitoring of riparian areas in East Fork Beech Creek and revisited East Fork Big Creek 1-year

post treatment to address NEPA requirements (funded by CFLRP monitoring budget).

- Finalized analysis of existing vegetation and potential forage production in collaboration with the Prairie City ITD team (Malheur NF) for the Blue Dollar AMP.

- Assessed restoration needs of the Dugout Natural Research Area (Malheur National Forest). Worked out agreement with the Blue Mountains Forest Collaborative and secured $70,000 of competitive funding to support the restoration work by Prairie City Ranger District.
- Served as Climate Change Coordinator on the Wallowa-Whitman NF.
- Participated in research on the efficiency of a pheromone in repelling mountain pine beetle from whitebark pine.
- Continued to provide clients with *Walter Climate Diagrams* for particular areas of interest. Diagrams show month-by-month current and expected future changes in seasonal climate. We developed an ArcGIS tool that allows any user to produce these diagrams. Available to those with Forest Service T-drive access at: T:\FS\NFS\R06\Program\ResourceInfoMgmt\GIS\Climate\Walter_Climate_Diagram_Tool_Package.
- Continued to provide technical assistance, vegetation data, and geospatial analytical products to natural resources specialists, leadership teams and collaborative groups on all three Forests.
- Mentored a Presidential Management Fellow on a detail to our group in her first year as an Ecologist.
- Conducted plant association trainings on 2 forests, a key tool for silviculturists and wildlife biologists.
- Developed the first whitebark pine predictive habitat distribution model for the Blue Mountains.
- Developed a mean monthly snowpack dataset for Region 6 (depth, snow-water equivalent, and extent) from raw NOAA data. These data were not previously available and are important for a wide variety of modeling and analyses. For example, they were critical to the development of a robust habitat suitability model of whitebark pine. Available to those with Forest Service T-drive access at: T:\FS\NFS\WallowaWhitman\Program\Ecology\GIS\Data\R6_Snowpack.

Products, Papers, and Publications

Churchill, D.J., G.C. Carnwath, A.J. Larson, S.A. Jeronimo. 2017. Historical Forest Structure, Composition, and Spatial Pattern in Dry Conifer Forests of the Western Blue Mountains, Oergon. Gen. Tech. Rep. PNW-GTR-956.

Dwire, K.A., S. Mellmann-Brown, J.T. Gurrieri. 2017. Potential effects of climate change on riparian areas, wetlands and groundwater-dependent ecosystems in the Blue Mountains, Oregon, USA. *In* Halofsky, J.E. and D.L. Peterson, eds., Climate Change Vulnerability and Adaptation in the Blue Mountains Region. Gen.Tech. Rep. PNW-GTR-939.

Kerns, B.K., D.C. Powell, S. Mellmann-Brown, G. Carnwath, J. Kim. 2017. Effects of climate variability and change on upland vegetation in the Blue Mountains. *In* Halofsky, J.E. and D.L. Peterson, eds., Climate Change Vulnerability and Adaptation in the Blue Mountains Region. Gen. Tech. Rep. PNW-GTR-939.

Wijayratne, U.C. and S. Mellmann-Brown. 2017. Assessing the impacts of ungulate grazing on biological soil crusts using long term grazing exclosures. Presentation, Ecological Society of America National Conference: August 1-5, 2017, Portland, Oregon.

Responding to Future Needs:

Riparian management continues to be a major challenge for all three forests. It remains our long-term vision to develop spatially explicit future desired conditions within riparian valley bottoms and describe appropriate management actions.

In the more immediate future we intend to

- Advance riparian management consensus by providing a science review to assist with project planning and testing the efficiency and cost of using unmanned aviation systems to monitor riparian livestock use;
- Develop a process to evaluate existing ecological conditions of riparian corridors
- Finalize analysis and report on effects of ungulates on biological soil crust in semi-arid grasslands
- Assist silviculturists and planners to develop the creative approaches needed in current restoration work.

Central and South Central Oregon Ecology Program (Area 4)

Deschutes, Fremont-Winema, and Ochoco National Forests
Crooked River National Grasslands

Program Priorities

The Central and South Central Area Ecology Team met priorities for 2017 which included several long-term projects:

- Provide riparian and meadow ecological expertise, conduct monitoring of ecological status attributes for Rangeland Allotment Management Plan renewal NEPA process.
- Develop understory and fuel profile development models for Central Oregon ponderosa pine forests to assist restoration and fuel treatment planning through our Alternative Fuel Treatment and the Repeated Fire Return Interval Administrative Studies.
- Assistance with Ecological Site Descriptions for the Crooked River National Grassland.
- Provide support for invasive weed management and monitoring.
- ID Team Members and Analyst Support for the Ochoco NF Big Summit Wild Horse EIS and Management Plan.
- Provide program support, training, and mentoring at all agency levels.

Area 4 Ecology Program Team:

Gregg Riegel, PhD	**Cooperators**
Elizabeth Johnson	Steve Gibson
Mike Simpson	Ben Goodin
Claire Addis	Amy Markus
Conor Bidelspach	Jennifer Ferriel
Kristen McBride	Ed Brown
Marty Yamagiwa	Joe Washington

Accomplishments

- Effectiveness Monitoring
- Re-measured riparian monitoring plots that were initially established up to 20 years ago on the Fremont-Winema and Ochoco NF's.
- Re-measured and established new riparian plots for the Lakeview BLM District in the Warner Mountains.
- Measured streambank vegetation using Multiple Indicator Monitoring (MIM) protocol overlaid on riparian effectiveness monitoring plots, Fremont-Winema NF.
- Re-measured Alternative Fuels Treatments study plots. This long term study began in 2001 and covers the Deschutes, Fremont-Winema and Modoc NF's. Treatments include prescribed fire, prescribed mowing, thinning followed by prescribed fire, and untreated control.
- Assisted with whitebark pine permanent plot transect re-measurements on the Deschutes NF.

Photo: Identifying riparian species composition in nested frequency rooted plot frames is challenging and requires a high level of taxonomic skills. Ecology Program Botanist Claire Addis (kneeling) discusses sedge identification with Lead Monitoring Ecologist Beth Johnson (orange vest on right assisted by Taz Dog). Collaboration and training on field methods with NE Oregon Ecologist Upekala Wijayratne (standing on left) and PMF Ecologist Carlyn Perovich. Squaw Meadows, Ochoco NF, Photo by Conor Bidelspach, 7/25/17.

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Planning

- Continued work on Region-wide Potential Natural Vegetation (PNV) mapping. Extended mapping into California to support R5/R6 Bio-Regional Assessment scheduled for 2018.
- Landscape Assessments for Twin Project on the Deschutes NF, and Blue Mile Project on the Fremont- Winema NF.
- Field assessment assistance to address the 9th Circuit Court of Appeals Reversed and Remanded Decision against the Klamath NF, (Region 5) for failure to consider environmental impacts of cattle drift onto Rogue River Siskiyou NF.
- Coordinate Metolius River invasive species treatments.

Technology Transfer

- President of the Northwest Scientific Association. *Understanding and Managing Diversity: From Landscapes to Genes* and Plenary Session Moderator, *Mixed Severity Fire and the Effects on Biodiversity* 88th Annual Meeting, Ashland, OR.
- Ecological Site Description Workshop, Crooked River National Grassland with Tamzen Stringham (Univ. of NV, Reno) and Pat Shaver (OSU).
- Rangeland Monitoring Workshop. Discussion with Washington Cattleman's Assn, Tonasket, RD and Okanogan-Wenatchee NF personnel on utilization methods and interpretation.
- Cadre Instructor: Implementing Indicators of Rangeland Health. Las Vegas, NV; and Boise, ID.
- Cadre Instructors: Rx 310 Fire Effects Flora and Weeds modules, PNW Training Center.
- Courtesy Faculty Member, OSU: Trent Seager PhD Defense and Rangeland Analysis class lecture.
- Presenter *Forest Ecosystems of Mt. Bachelor Ski Area*, USFS Ski and Snow Ranger Volunteers, and Bend Ski Club.

Products, Papers, and Publications

Case, M.J., B.K. Kerns, J.B. Kim, M. Day, A. Eglitis, M. L. Simpson, J. Beck, K. Griener, G. Riegel Halofsky, J.E. and D.L. Peterson. In Press. in Climate Change Vulnerability in Central and South Central Oregon. Gen. Tech. Rep. PNW-GTR-XXX. *In Review.*

DeMeo, T., R. Haugo., C. Ringo, J. Kertis, S. Acker, M. Simpson, and M. Stern. Expanding Our Understanding of Forest Structural Restoration Needs in the Pacific Northwest, USA. 31p. Northwest Science. *Accepted.*

Johnson, E. 2017. Riparian Ecological Status Monitoring Reports for the Fremont-Winema and Ochoco NF's.

Riegel, G.M., R.F. Miller, C.N. Skinner, S.E. Smith. C.A. Farris, and K.E. Merriam. Northeastern Plateau Bioregion. In: J. van Wagtendonk, N.G. Sugihara, K.E. Shaffer, J. Fites-Kaufman, and A.E. Thode, editors. Fire in California's Ecosystems, 2nd., Univ. of Calif. Press, Berkeley. *In Press.*

Pellant, M.L, D.A. Pyke, J. Herrick, P.L. Shaver, F. Busby, G. Riegel, N. Lepak, B.A. Newingham, E.Kachergis, and D. Toledo. In press. Interpreting Indicators of Rangeland Health. Interpreting Indicators of Rangeland Health-Version 5. USDI Bureau of Land Management, Denver, CO. ITR XXXX-X. *In Review*.

Presentations

Pellant, M.L, D.A. Pyke, J. Herrick, P.L. Shaver, F.Busby, G. Riegel, N. Lepak, B.A. Newingham, E.Kachergis, and D. Toledo. 2017. Status and Updates to Interpreting Indicators of Rangeland Health. Interpreting Indicators of Rangeland Health-Version 5. Soc. For Range Manage, 70th Annual Meeting, Jan. 29-Feb. 2. St. George, UT.

Simpson, M. and Wing, B. Using Lidar In Forest Health Project Planning: A Case Study from the Ochoco National Forest on Identifying the Abundance of Large Trees, Managing Stand Densities to Reduce the Risk of Bark Beetle Caused Mortality, and Detecting Root Disease. Presentation at the National Silviculture Workshop Flagstaff AZ. 07/18/2017.

Simpson, M. Potential Vegetation Mapping based on GNN 1984-2012 Time Series Imputation of FIA/CVS Plots. Presentation at R6 Regional Ecology Meeting Wenatcheee WA 10/17/2017.

Responding to Future Needs:

Long-term fire effects monitoring and administrative studies examining the effects of various fuels treatments and historic return intervals.

Effectiveness monitoring of livestock grazing on rangeland and riparian vegetation. Discerning grazing effects from hydraulic flux is key to understanding management induced change.

Assistance with developing management strategies to address invasive annual grass concerns.

Assistance with Ecological Site Descriptions for the Crooked River National Grassland.

ID Team member and analyst support for the Ochoco NF Big Summit Wild Horse EIS and Management Plan.

Support Districts on Project-level NEPA.

Southwest Oregon Ecology Program (Area 5)

Rogue River-Siskiyou and Umpqua National Forests

Program Priorities

The Southwest Oregon Ecology Program works with other ecologists and natural resource specialists to develop a program of work and determine priorities. This year, our program strove to further develop professional relationships with both governmental and non-governmental ecologists in Oregon and northern California with a goal of developing a diverse network of ecologists that can collectively think about and apply best science approaches to ecological management of forest lands. Our Forest Service team that supports the Rogue River-Siskiyou and Umpqua National Forests also work closely with the forest natural resource groups to determine priorities. Program priorities for 2017 included:

- Continuing our support of large scale forest restoration projects on both forests
- Coordinating with the Southwest Oregon Climate Adaptation Partnership (SWOAP) team to complete the climate adaptation assessment and final workshop
- Support wildfire suppression and management actions as Resource Advisors
- Work closely with Forest Leadership Teams to support ecological priorities
- Assist with the completion of the new R6 Potential Natural Vegetation (PNV) map
- Assist with the publication and promotion of the Rogue Basin Restoration Strategy.

Area 5 Ecology Program Team:

Pat Hochhalter

Amy Nathanson

Bill Kuhn

Accomplishments

- We continued our close involvement as members of the team working on developing a new Region 6 potential natural vegetation (PNV) map. Pat and Amy attended many working meetings to review and discuss methods and draft map products, and improved data quality. They also solicited review from specialists across all forest districts to improve map accuracy.
- We continued to support the development of the Calf-Copeland restoration project on the Umpqua National Forest. Amy collected and managed project data, and also served as the project lead for a two month detail. Amy continued to foster a working relationship with the Umpqua Forestry Coalition (UFC), a local collaborative which represents a broad range of views from environmentalists, timber industry advocates, and members of the public and is especially involved in the Calf-Copeland project. She attended UFC meetings, provided project information, and planned group field trips.
- Pat and Bill assisted with the evolution of the purpose and need for the Stella landscape restoration project on the Rogue River-Siskiyou National Forest.
- We continued our assistance with the Ashland Forest Resiliency (AFR) project within the Rogue River-Siskiyou NF with review of management actions and post-prescribed fire tree mortality assessments.
- We continued to act as climate change coordinators for both forests. This included writing or assisting in writing climate change sections and responding to public comments for all NEPA documents, and assisting with climate change elements in proposals submitted by the natural resources groups.
- We continued working with the SWOAP lead team to determine the scope and details of the climate change adaptation assessment for the Umpqua and Rogue River-Siskiyou National Forests and surrounding public lands. We reviewed draft analysis outputs and coordinated planning a project ending workshop.

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- We reviewed the final draft of the Rogue Basin Cohesive Forest Restoration Strategy and assisted in presenting and promoting this strategy across the Rogue River-Siskiyou National Forest and the Region.
- Assisted in acquiring additional LiDAR data for the Umpqua National Forest to bring the data coverage for the forest to 100%. Worked with Regional Biometrician and other regional office specialists to plan field data collection. Combined with the LIDAR data, the field data is currently being used to model other forest structural datasets.
- Conducted downed wood and snag analysis using the DecAID database for the Rogue River-Siskiyou National Forest.
- Reviewed the LANDFIRE biophysical settings (BpS) for southwest Oregon.
- Continued data stewardship for ecology legacy data, including the Fred Hall legacy photos and the Ecology Program permanent plot database.
- Served as active members on the Southern Oregon Forest Restoration Collaborative (SOFRC), a group that is active in promoting public land management practices that enhance ecological integrity and resiliency and a diverse and healthy economy supported by public lands.
- During the active fire season of 2017, we assisted as Resource Advisors and supported the North Umpqua Complex fires (Umpqua NF), the High Cascades Complex (RRS NF) and the Miller Complex (RRS NF), and Chetco Bar (RRS NF). We also participated in the Rapid Assessment Team assessments of post-fire management and restoration priorities on both forests.
- Continued forest education outreach to young students in southwest Oregon. This included participating in the ecology, silviculture, and forest management session in the annual Resources and People (RAP) Camp for approximately 60 high school students, as well as the outdoor silviculture exercise as part of the Kids in the Woods program for 30 middle school students from Ruch Middle School.
- Supported silviculture and timber professional certifications on both forests by serving as natural resource specialists during practical exams.

Stella restoration project field data collection (photo credit: B. Kuhn).

Products, Papers, and Publications

Presentations

West Side Restoration Workshop. May, 2017. "Umpqua Vegetation Management Strategy." (A. Nathanson.)

West Side Restoration Workshop. May, 2017. "Rogue Basin Cohesive Forest Restoration Strategy." (B. Kuhn)

Responding to Future Needs:

The SW Oregon Ecology group will continue to build a diverse supporting team of ecologists and other related professionals who can assist in using ecological theory and application to best manage our two national forests. We will continue to promote ecological principles, concepts, and applications in all planning and management actions on both forests to ensure ecological integrity is a top priority. We will focus our efforts on assisting with ecological restoration, helping the forests adapt to changing climate, monitoring vegetation and landscape change, and leading the way on forest resiliency and responsiveness to disruptions in fire regimes and forest dynamics.

Northwest Oregon Ecology Program (Area 6)

Siuslaw, Willamette, Mt. Hood National Forests; Columbia River Gorge NSA

Program Priorities

The Northwest Oregon Ecology Program meets yearly with its working group (natural resource specialists from Forests and Northwest Oregon BLM) to discuss ecological issues and develop potential program of work ideas. Ideas are vetted, proposal are written and work is prioritized with the steering committee of Forest Natural Resource staff, Regional Ecologist, and BLM representatives.

Program priorities for 2017 included:

- Continuing long-term, landscape projects:
  - Special habitat mapping and classification
  - Historical range of variability
  - Deadwood analysis
  - Continuing to facilitate climate change information exchange
  - Post-fire vegetation and CWD trajectories
  - Tools for riparian vegetation management
- Provide technology transfer
- Assist Forests with high priority issues:
  - Dunes restoration
  - Rigdon Landscape analysis with Collaborative
  - Huckleberry management
- Assist with the completion of the R6 Potential Natural Vegetation (PNV) map as well as Bioregional Assessment Area including portions of R5
- Collaborate with NRCS, Regional soils program

Area 6 Ecology Program Team:

Steve Acker

Doug Glavich

Jane Kertis

Accomplishments

- Special habitat mapping/classification: Worked with Northwest Habitat Institute to learn LIDAR-based remote sensing mapping process. One test quad completed on the Willamette NF, (Staley Ridge--503 polygons, 821 acres delineated). Draft of Coast Range Special Habitats plant community guide written.
- Historical range of variability: Completed state and transition modeling of Cascade area using ST-SIM Spatial. Compiled structural, seral stage ranges for multiple potential vegetation types across landscape area and individual landform groups. Continuing to work on complementary patch analysis. Initial results prepared and ready for review.
- Deadwood analysis: Worked with Siuslaw staff to prepare draft of deadwood white paper. Worked with Mt. Hood and Willamette staff to develop white paper outline, set assignments and timelines. Worked with NW Oregon BLM staff to begin white paper development. Participated on Regional team preparing new version of DecAID website. Responded to requests from field wildlife biologists for help with DecAID interpretation.
- Climate Change information exchange: Climate change coordinator for Siuslaw National Forest. Collaborated with Hebo District and Tillamook County to further local climate change assessments.

Photo: NW Oregon Ecologists with Jessica Hudec (Western Washington ecologist) at Mt. Hood Plant Association Training

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- Post-fire vegetation and CWD trajectories: Co-Principal Investigators of funded Joint Fire Science study ("Post-fire landscape management and fire severity influences in Western Oregon forests"; J.B. Kauffman of Oregon State University PI). Facilitated field site identification.
- Tools for riparian vegetation management: Completed first version of vegetation reference conditions for High Cascades, current conditions for Flat Country (Willamette) and Crystal Clear Restoration (Mt. Hood) planning areas. Met with Mt. Hood, Siuslaw and PNW Research Station staff to discuss reach classification for western Cascades and Coast Range. Completed first version of reach classification for western Cascades. Met with RO program managers (hydrologist, fisheries biologist, and TES species) to share results and discuss planned outreach to NMFS. Met with NMFS riparian scientist Tim Beechie to share results. Completed first draft of white paper.

Technology transfer

- Two Plant Association Trainings–one each in Coast Range and Cascades; classroom and field exercises focused on how to use plant associations to read and manage the landscape.
- Two field tours with Southern Willamette Forest Collaborative (SWFC) –Fire ecology of the Rigdon Landscape Area; Jim's Creek Savanna Restoration.
- Collaborated with NW Fire Consortium to plan Fire in the Pacific Northwest–Past, Present and Future conference.
- Bioregional Assessment–provided feedback on potential themes, data and analysis methods; collaborated with R5 planners to provide potential data sources and metrics.

Forest high priority issues

- Dunes restoration–collaborated on draft of Strategy document; co-facilitator of the Oregon Dunes Restoration Collaborative; Interdisciplinary team member; facilitated field tours to identify areas with high restoration potential.
- Rigdon Landscape Analysis-Co-landscape assessment facilitator–worked internally and with SWFC on assessment of Rigdon landscape. Looked at landscape elements, flows, identified landscape objectives and patterns.
- Regional Potential natural vegetation mapping--Applied revisions to R6 vegzone layer. Collaborated with R5 Ecologists to develop vegzone version for the upcoming Bioregional Assessment area.
- Collaborated with Natural Resource Conservation Service (NRCS) to analyze the Major Land Resource Area (MLRA) to propose updated Land Resource Units (LRU). Worked with Willamette National Forest Soil Scientists and NRCS staff, to help hone their plant association skills in their soil mapping efforts.

Products, Papers, and Publications

Presentations

Fire in the Pacific Northwest—Past, Present and Future, May 2017 Conference:
1. "Ecology: Effects of Fire on Vegetation."
2. "Restoring mixed severity fire regimes on the Willamette National Forest—opportunities and challenges"

Ecological Society of America 2017 Annual Meeting: "Classification and assessment of riparian ecosystems in northwest Oregon for restoration planning."

SWF Collaborative and Rigdon IDT meetings:
1. "Fire Ecology of the Rigdon Landscape"
2. "A Landscape Assessment Process"
3. "Natural Processes—Effects on Ecosystem Elements, Flows, and Function in the Rigdon Landscape"

Publications

Spies, T, P. Hessburg, C. Skinner, K. Puettmann, M. Reilly, R.J. Davis, J. Kertis, J. Long. 2017 (in review). Old growth, disturbance, forest succession and management in the area of the Northwest Forest Plan. In: Synthesis of Science to Inform Land Management within the Northwest Forest Plan Area: PNWGTR

Responding to Future Needs:

The NW Oregon Ecology group will continue to engage with our working group and steering committee to ensure we deliver timely and relevant products. We will continue to make progress on long term landscape projects. We will assist in Regional products and tools. We will promote applied ecological principles while consulting, partnering and serving our Area and Region.

Art and Science

Heart of Forest tour, High Desert Museum, Bend. DJ Spooky", Paul Miller, mixed live music with the Oregon State University Wind Ensemble and recorded electronic music with aerial video of Oregon forests, along with an on-stage conversation with a forest ecologist Gregg Riegel.

Oregon Community Foundation awarded the High Desert Museum in Bend to create Water in the West an interdisciplinary exhibition that will connect artists from multiple mediums including visual arts, music and spoken word with ecologist Gregg Riegel to creatively approach the topic of water in Oregon and explore the relationship between art and science. The exhibition will be on display from May 2019 to November 2019.