2020 Ecology Program Yearbook

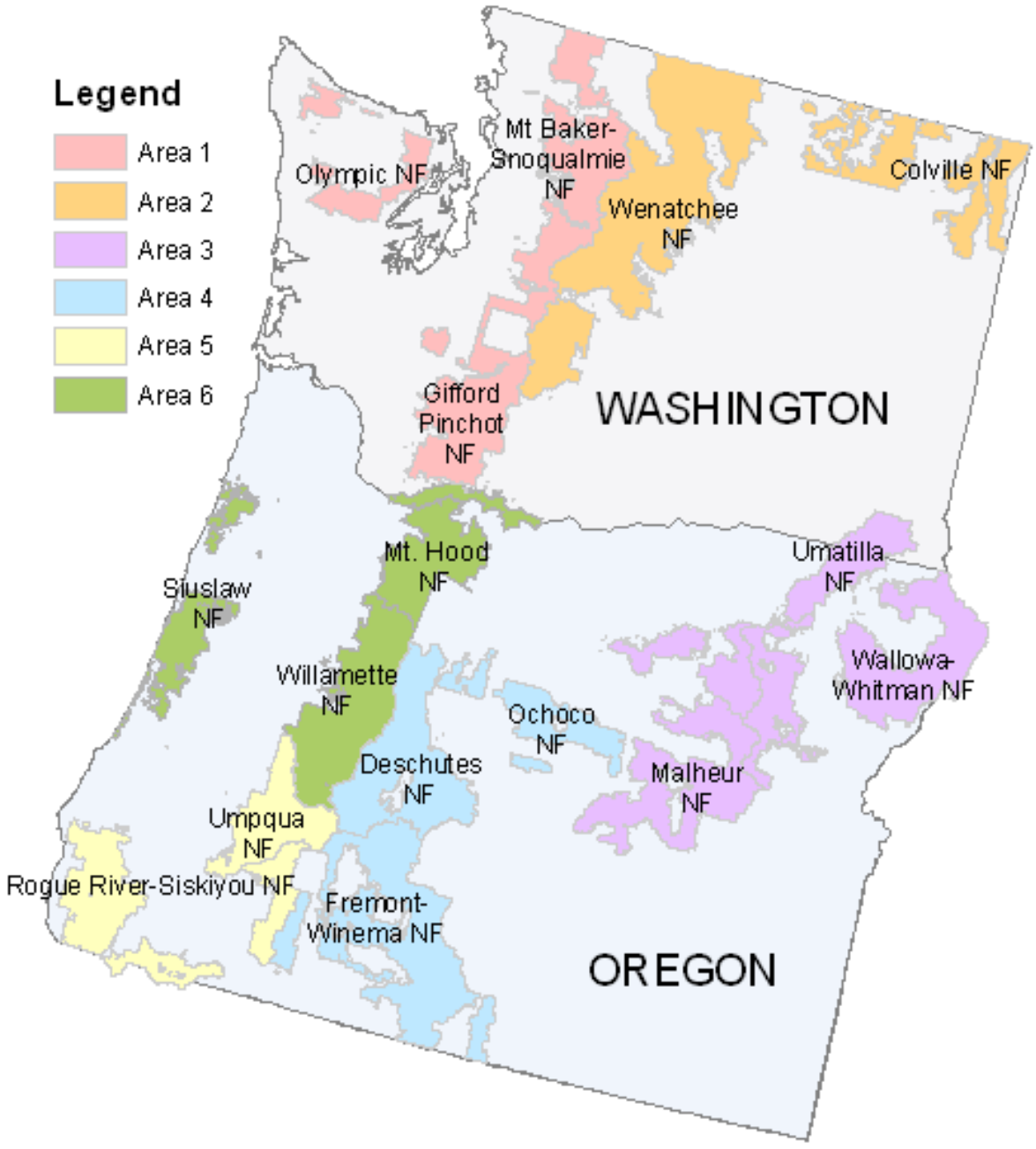
Applying Science to Serve the National Forests

Special Section on Five-Year Strategy to Support Restoration

Cover photo: Whitebark pine habitat, Wallowa Mountains, Wallowa-Whitman National Forest

Contents

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), support to planning, and partnerships (the "Seven Pillars"). 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 (on extended leave), Kevin James (with Botany), Kim Crider, Audrey Maclennan (detail)
2	**Eastern Washington**	Vacant (vice Dickinson), Monique Wynecoop, Aja Woodrow (detail)
3	**Northeast Oregon**	Vacant (vice Wijayratne), Nathan Poage, Christal Johnson, Vacant (vice Jennings, with FHP)
4	**Central Oregon**	Gregg Riegel, Mike Simpson (with FHP), Cristina Mckernan, Vacant Range Ecologist
5	**Southwest Oregon**	Bill Kuhn, Pat Hochhalter, Devin Mcmahon
6	**Northwest Oregon**	Upekala Wijayratne, Doug Glavich, Bobette Jones

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.

Beginning in FY20, with the support of the Forest staff officers, ecologists are now fully funded, with funding held in a central Regional Office account and drawn on by the Area programs. **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. Two student interns from De La Salle North High School, Justin Thomas and Max Pettit, work on data management on a part time basis.

Core Services (the "Seven Pillars")

Landscape Assessment

The new **potential natural vegetation (PNV) zone/subzone map** is gaining use, notably in the combined R5/R6 planning effort for the Klamath Province (Rogue River-Siskiyou, Klamath, Six Rivers, Shasta Trinity, and Mendocino National Forests). Metadata and a General Technical Report (GTR) are under development.

A companion product of the PNV maps is the forest structural restoration map (Haugo et al. 2015, DeMeo et al. 2018), which is gaining traction as an informal Regional standard for the planning process. This is also being used in the R5/R6 planning effort. It was also used as background information for the revision of the screens 21-inch rule and by Washington DNR in their Forest Health Strategy. We are continually refining and updating this product with more current information and have an agreement with the University of Washington to explore future iterations of the map, such as seeing how departure is affected by climate change.

At the Area level, ecologists conduct landscape assessments to support restoration and other projects in western Washington, eastern Oregon, central Oregon, and northwest Oregon. The landscape aspects of Collaborative Forest Landscape Restoration Projects (CFLRPs) are also addressed by ecologists.

Western Washington ecologists are providing context and climate change analysis to the Mt. Baker-Snoqualmie North Zone Planning Team and Collaborative in support of two restoration project areas (North Fork Nooksack and North Fork Stillaguamish project areas). They are also contributing a Forest landscape analysis and design process for the Wind River and Little White Salmon watersheds, Gifford Pinchot South Zone/South Gifford Pinchot Collaborative group. Results were used to define desired conditions, treatment objectives, and design criteria based on land management documents and other values identified.

Other Area-level Ecology support includes:

- In both Washington and Oregon, late successional reserves (LSRs) in fire-prone ecosystems are presenting challenges not foreseen when the Northwest Plan was written over 25 years ago. Ecologists are working to resolve these issues.
- Vegetation and wildfire departure analysis for the Stella Restoration Project in Southwest Oregon.
- Historic range of variation assessment for the West Cascades.
- Landscape assessment of the 3D planning area which spans three districts on the Willamette NF.
- Working with US FWS and other partners to the planning necessary to reduce risk to endangered species affected by the Northwest Plan on the Okanogan-Wenatchee NF.
- Supporting the Malheur NF Range NEPA team with the South Silvies Allotment Management Plan.
- Significant involvement in the development of the Calf-Copeland Restoration Project on the Umpqua NF, in close cooperation with the local collaborative group (Umpqua Forestry Coalition).

Technology Transfer

Covid mostly prevented us from holding in-person trainings during the year, but technology transfer efforts continued online.

In Central Oregon, ecologist Gregg Riegel serves as president of the Northwest Scientific Association and is on the training cadre for Indicators of Rangeland Health.

Ecology continues to support the Region's Decayed Wood Advisor (DecAID), a key planning tool used in NEPA documents throughout the Region. With Steve Acker's retirement, the Ecology contributions to DecAID are now led by Pek Wijayratne and Pat Hochhalter. We are grateful for Steve's work on this over the years.

In October we held our annual meeting of ecologists in the Region online because of Covid restrictions. Southwest Oregon ecology area hosted the event and arranged three mornings of interesting presentations on landscape assessment and other topics.

The program continues to host a variety of activities to promote science-management partnerships and science sharing, including webinars, facilitated by Cheryl Friesen. Cheryl provides invaluable facilitation services to the Ecology Program and is our key liaison with the Pacific Northwest Research Station. Cheryl also helped facilitate our annual meeting.

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. Monitoring conducted efficiently and effectively completes the NEPA triangle and facilitates adaptive management. Monitoring, moreover, is a way to build trust and social license with stakeholders so that we can implement a program of work.

In 2020 a new Common Monitoring Strategy was developed and approved for all new CFLRPs and extensions going forward. This was developed directly from lessons learned from the first 10 years of CFLRPs, including field concerns about lack of capacity, turnover, and the need for frequent reporting. The strategy was painstakingly developed over six months with the involvement of both project and Regional CFLRP coordinators and subject matter experts. The Northern Blues CLFRP was selected and funded in 2020 and will be the first to use this new approach.

We continue to work closely with Regional range program manager, Robert Garcia to develop a more efficient, integrated range monitoring effort. We are seeking to build database management capacity to support this.

Other specific recent Ecology Program monitoring contributions to the Forests:

- Simplify and standardize monitoring protocols wherever possible. Examples are FIREMON protocols for fuels data, and the new Common Monitoring Strategy for CFLRPs, with its 13 core indicators.
- Riparian vegetation monitoring in advance of restoration activities on the Wallowa-Whitman NF and Malheur NF.
- All ecology areas with CFLRPs support the monitoring effort on these projects. The Northern Blues Collaborative was added to the CFLRP program in 2020, and ecologists are playing a key role in developing a practical monitoring plan for this group.
- Extensive field-based consultation for aspen restoration on the Umatilla NF, Walla Walla RD.
- Implementing the new Colville NF Fire and Fuels Monitoring Plan, in cooperation with partners.
- Streambank vegetation monitoring on the Ochoco and Fremont-Winema National Forests.
- Monitoring thinning treatments for huckleberry enhancement on the Mt. Hood NF.

Mentoring

Since 2011 we have been hosting **student interns** from De La Salle North High School in Portland. With the onset of the Covid pandemic we have had to conduct this online, first in one-hour sessions but now four-hour sessions where they are building skills in Excel. This school year our students Justin Thomas, a senior, returned. We added Max Pettit, also a senior.

Ecologists are good mentors because of our long tenure in place. We can help introduce new silviculturists, wildlife biologists, and other specialists to an area through plant association and other trainings. We are a resource to get questions answered and to help solve problems, functioning much like agricultural extension agents.

We are at an important juncture in the program because a number of key ecologists have recently retired or will retire soon. We are seeking to build the next generation of skill capacity in landscape assessment, data management and analysis, state and transition modeling, fire ecology, and other needs. Mentoring will be critical in this regard.

We also encourage a wide variety of mechanisms to ensure cross-training and mentoring opportunities, such as **detail assignments**. Currently Audrey Maclennan is serving on detail with the Western Washington ecology team, Aja Woodrow is serving in the eastern Washington ecology area. Amarina Wuenschel detailed into an ecologist position in the NE Oregon Ecology Area for a time, Colin Meston served in the same role in Western Washington, and Wendy Peterman in NW Oregon. Details serve as a way for both parties to "test drive" positions, provide short-term capacity, and obtain fresh perspectives.

Products (Maps, Presentations, Publications, Databases)

Review and refinement of the potential vegetation map, at both vegetation zone and subzone scales, was the big ecology program product accomplishment during the past year. Work also proceeded in landscape departure and restoration needs assessments. See the preceding Landscape Assessment section for more details.

See the area-specific reports that follow for details on their specific publications and presentations.

Western Washington

Presentations

- Hudec, J.L. 2020. Range of Variability: Terminology and Concepts. Presentation at Regional Ecology Program Meeting. Stevenson, WA.
- Meston, C. 2020. Early Seral Design and Monitoring in Upper Wind Planning Area. Presented on separate occasions to Region 6 Ecology Annual Meeting, South Zone Interdisciplinary Team, South Gifford Pinchot Collaborative Group.

Publications

- James, K. and P. Reed. 2020. Ecological Context and Management Options for the Matrix Land Use Allocation within the North Fork Nooksack Vegetation Management Project Area. Unpublished report. Prepared in support of restoration on the Mount Baker-Snoqualmie National Forest.

Awards

- WWA ecologist Kevin James received the honorable mention for the Federal Agency category for the 2020 Climate Adaptation Leadership Awards (CALA) in recognition of climate smart travel management on the Mount Baker-Snoqualmie NF. The work was a joint effort supported by Conservation Northwest and analysis supported two NEPA decisions.

Eastern Washington

Presentations

- 2020. Wynecoop. Invited Speaker and sat on the Tribal Panel Discussion at the National Cohesive Strategy Meeting. Plymouth, MA.
- 2020. Wynecoop. Intertribal Timber Council. Invitation to speak about TEK Applications in Fire & Fuels Management. Fairbanks, AK. Cancelled due to pandemic.

- 2020. Wynecoop. Northwest Scientific Association. NW Native Foods Special Session Coordinator. Oregon. Speakers rescheduled as a Webinar Series.
- 2020. Wynecoop. AFE Podcast about research paper.
- 2020. Wynecoop. NW Climate Adaptation Science Center Key Note Address, "Promoting Ecological and Cultural Resilience in a Future of Climate and Paradigm Shifts".
- 2020. Wynecoop. Co-organize Tribal Fuels Workshop with NW BIA and the NRFSN. Present on resources and research needs and opportunities.
- 2020. Wynecoop and Wright. Rocky Mountain Research Station Brown Bag Discussion. Fostering Tribal Engagement.
- 2020. Dickinson. Coordinated, organized, and participated in an E. WA Zone-wide Range Monitoring Meeting.
- 2020. Dickinson. Presented a talk about landscape resilience at the joint FHP and Area Ecology Annual Meeting.

Publications/Products

- 2020. Dickinson et. al. Co-authored the second CFLRP Proposal.
- 2020. Dickinson et. al. Submitted the 10-year final CFLRP Monitoring Report.
- 2020. Dickinson et. al. Submitted the Annual CFLRP Report.
- 2020. Wynecoop. Released the first issue of the NRFSN Bi-Annual TK & Fire in the Northern Rockies and PNW Newsletter.
- 2020. Wynecoop. White bark Pine Ecosystem Foundation Nutcracker Notes Article, "Making Science Delivery Socially and Culturally Relevant".
- 2020. Wynecoop. IFTDSS Case Study for the Colville National Forest Selkirk, Sullivan, Slate, and Salmo Watersheds.

Northeast Oregon

Presentations

- Poage, N. 2020. Range of Variability (presentations). Northern Blues Forest Collaborative (May 28, 2020) and Sustainable Northwest's PNW Forest Collaborative Workshop Webinar Series on July 17, 2020.

Publications

- Lash, K. and U. Wijayratne. 2019. Whitebark Pine (*Pinus albicaulis*) Survey: Wallowa Mountains, Oregon. ISSSSP Report.
- Wijayratne, U., M. McWilliams, K. Chadwick, J. Lippert. 2019. Whitebark Pine (*Pinus albicaulis*) Permanent Monitoring Plots. ISSSSP Report.
- Wuenschel, A., C. Johnson, N. Poage, K. Kemp. 2020. Northern Blues Collaborative Draft Monitoring Framework

Central Oregon

Publications

- McCaskill, G., Gregg Riegel, and Matt Busse. Intensive burn frequency favorably affects stand structure and growth in an old growth ponderosa pine forest in central Oregon. Forest Science. *Accepted*

- Pellant, M., P.L. Shaver, D.A. Pyke, J.E. Herrick, N. Lepak, G. Riegel, E. Kachergis, B.A. Newingham, D. Toledo, and F.E. Busby. 2020. Interpreting Indicators of Rangeland Health, Version 5. Tech Ref 1734-6. U.S. Department of the Interior, Bureau of Land Management, National Operations Center, Denver, CO.

Southwest Oregon

Presentations

- Kuhn & Kemp-Jennings. 2019. Umpqua National Forest Restoration Priorities: Wildfire Risk and Other Objectives. Presentation to the Umpqua Forestry Coalition, Roseburg Oregon.
- Kuhn. 2019. Climate Change & Vulnerabilities for Landowners in SW Oregon. Presentation for Oregon State University Extension Program, Maintaining a Healthy Forest in an Uncertain Climate. Medford, Oregon.
- Kemp-Jennings. 2019. Understanding Natural Range of Variation." Landscape Ecology and Planning Workshop, Portland, OR.
- Kuhn. 2020. Climate Adaptation Strategies, Tools, & Actions. Presentation for Klamath-Siskiyou Wildlands Center hosted Climate Smart Conservation webinar series.
- Kuhn. 2020. Forest Ecology & Management Under Changing Climate & Disturbance Regimes. Webinar presentation to Southern Oregon Climate Action Network Coastal Chapter.

Publications

- Halofsky, J. E., J. J. Bronson, W. C. Schaupp, Jr., M. P. Williams, B. K. Kerns, W. A. Kuhn, C. Maxwell, J. B. Kim, and R. M. Scheller, In press. Chapter 5: Climate Change Effects on Vegetation and Disturbance in Southwest Oregon. In: Halofsky, J. E., D. L Peterson, and R. A. Gravenmier (Eds.), Climate Change Vulnerability and Adaptation in Southwest Oregon. USDA Forest Service, Pacific Northwest Research Station, Gen. Tech. Rep. PNW-GTR-xxx.

Northwest Oregon

Products

- Acker, S., J. Kertis, W. Peterman, U. Wijayratne. Developed forested Ecological Site Groups (ESGs) in collaboration with NRCS. ESGs will be publicly available through the Ecosystem Dynamics Interpretive Tool (EDIT) and Web Soil Survey.

Regional Office

Presentations

- DeMeo, T. CFLRP Monitoring. Lakeview All Lands Collaborative meeting.
- DeMeo. T. and L. Buchanan. CFLRP Common Monitoring Strategy. Presented to CFLRP coordinators in eight Forest Service Regions.

Publication

- DeMeo, T., L. Buchanan, and J. Robertson. 2020. Monitoring in the Next Round of Collaborative Forest Landscape Restoration Projects. Washington, DC, USDA Forest Service, 11 pp. plus table

Support to Planning

In addition to the SW Oregon Area and the Regional ecologist participating on an assessment team for the joint R5/R6 planning effort, ecologists Summer Kemp-Jennings and then James Dickinson served on the Team 21 revising the 21-inch standard for the Eastside Screens. Additionally,

- The Eastern Washington Ecology Area provided data and additional input in support of compiling Forest Plan biennial monitoring reports for the Colville NF to meet 2012 Planning Rule requirements.
- The Eastern Washington Ecology Area will continue to develop the mechanisms necessary to have a strong monitoring and adaptive management framework for the Colville Forest's new forest plan.
- Northeast Oregon is also contributing to the planning effort by leading the state and transition collation and update for the Region, most recently with the five-Forest effort in Southwest Oregon/Northern California and in support of Washington DNR's Forest health strategy.

Partnerships

Winston Churchill once said, "The only thing worse than having allies is having no allies." The Ecology Program moves beyond happy talk to build solid, mutual relationships with partnerships that make our planning, monitoring, products, and trainings more useful, efficient, and powerful. Some examples of this are:

- Significant support to Washington DNR's Forest Health Strategy
- Collaboration with the PNW Station's co-production efforts, such as with carbon and the Westside Fire Initiative
- Furthering the work of the Pacific Northwest and Rocky Mountain Fire Science Consortia
- Collaboration on applications of the PNW Station's GNN mapping
- Efforts with The Nature Conservancy on supporting their Fire Training Exchanges (TREX) trainings, implementing monitoring in Northeast Oregon, and participating in the Fire Learning Network
- Working with researchers at Oregon State University, the University of Washington, and other institutions to see that their research is implemented, and to refine our products with new research findings
- Collaboration with the fire community by serving on fire incidents, participating in prescribed burning, and providing products to inform their work.

Five-Year Strategy for the Ecology Program 2020-2025

In Support of Restoration

***Emphasis Areas to Support Restoration Planning Through Implementation*:**

- **Ecology Organization**
- **Landscape Assessment**
- **Monitoring**
- **Collaboration**
- **Data Management and Analysis**
- **Climate Change Vulnerability Assessments**
- **Workforce Strategy: Investing in the Future**

Ecology Organization

Ecologists work on the National Forests in a zone concept, with several ecologists serving multiple Forests. They report to staff officers and ultimately Forest Supervisors, ensuring a high degree of accountability and applied science. Ecologists in this program function much like extension agents, to ensure useful information informs planning, decisions, and implementation.

To support the Region's five-year restoration strategy, **the ecology program plans activities in landscape assessment, monitoring, and other support to the planning process**, as well as getting things done on the ground. The ecology program has a long history of this support, as documented in the following.

Landscape Assessment As a Core Tool for Planning

A forest structural restoration needs map is now available for the entire Region and is being updated on a regular basis. We have coverage for all of R6 and the northern California portion of R5. The data summaries for restoration needs from the map have been used to support several planning efforts and projects. For example, the summaries have been used in project proposals for the next round of collaborative landscape (CFLRP) projects. The restoration needs map was also used as a key component in the BioRegional Assessment, under the direction of Carrie Spradlin. The map was used as background information for the Eastside Screens 21 Inch Rule Revision. The Washington Department of Natural Resources (DNR) is using the mapping process to support their 20-Year Forest Health Strategy. We are now using the map **to support the Forest plan assessment phase** for National Forests in the Klamath Province (Southwest Oregon and Northern California).

Monitoring

It is clear the Region needs a hard look at monitoring. In general monitoring is fragmented, uncoordinated and in need of review and reorganization. Some monitoring efforts are a legacy of bygone issues; others of when the Region was much better funded. In general, there is a need to reduce and simplify the list of monitoring questions—but assess and report on them more frequently so that they truly affect management decisions in an adaptive management context.

Ecology is committed to working with others to develop a coherent Regional monitoring strategy. We learned through long experience, including 10 years' experience with Collaborative Forest Landscape Restoration projects (CFLRPs), how to avoid the mistakes of the past and develop a monitoring approach that is coherent and efficient. Beyond that monitoring forms a social contract with our stakeholders to develop a learning process we all go through, leading to adaptive management. **The CFLRP process has been shown to lead to more accomplishment on the ground, and monitoring is an underpinning to support that process.**

Accordingly, working with a variety of personnel across the country, we developed a new Common Monitoring Strategy for the CFLRPs that emphasizes efficiency, appropriate standardization, and data management support. This is designed to address problems of turnover and lack of capacity reported from the field.

Beyond CFLRPs, we believe this could serve as a model for all monitoring. We developed this with the awareness and support of WO Planning staff and the National Monitoring Strategy. It could therefore link to the Forest Plan monitoring process. We have developed a crosswalk to relate CLFRP 10-year monitoring report attributes to the Biennial Monitoring Evaluation Report in Forest planning.

Range monitoring is also undergoing a focus on being more standardized and coherent. We are collaborating with the range program and range managers in the field to identify and standardize range monitoring protocols. For example, we met with the Okanogan-Wenatchee and Colville National Forests in October 2019 to discuss better analysis and reporting on MIM monitoring.

Collaboration

The ecology program finds efficiencies and strengths through collaboration with multiple internal and external partners. This is not happy talk; it is a carefully built network to get things done and build support for Agency objectives. Some examples include collaboration with:

- The Nature Conservancy on building the forest structural departure map and supporting the Fire Learning Network.
- Oregon State University on the GNN layer and the forest structural departure map.
- University of Washington for developing research into how climate change will affect our landscapes and the future range of variation.
- CFLRP Regional coordinators, project coordinators, and Washington Office leadership on better implementation and monitoring of CFLRP projects.
- Joint effort with R5 ecologists in planning assessment for the Klamath Province. This could become a model for Plan revisions going forward.
- Ecologists were key team members of the 21 Inch Rule revision effort.
- Emerging effort to better support riparian ecology needs throughout the Region.
- Key support to DecAID, an important planning tool.
- Monitoring support for the range program.
- Engaging with and supporting the PNW Station on their Coproduction Strategy, as well as carbon and westside fire initiatives.
- Ecologists are providing extension and monitoring support to recovery efforts following the 2020 fires in the Region

Data Management and Analysis

The ecology program recognizes data management and analysis will be needed to support these efforts, particularly as the planning staff evolves and identifies needs for plan revisions. We will work with the Forests and explore the best options to meet this need. Likely this will be some mix of ecologists, contracting, and potentially work with our partners.

Clear needs for this capacity are emerging:

- Support maintenance of key ecology data sets, including the ecology plot data set, the potential natural vegetation map, the ecological departure map, and range monitoring data. State and transition modeling supports these

products as well, and is critical to the planning effort. Clearly dedicated personnel time is needed for this. This need has been expressed from the Forests, from the ecologists, and from at least one university partner.

- Supporting the next round of CFLRP monitoring. A key feature of this is database management analysis support to the Forests. (See following Workforce Strategy section.)
- Emerging needs to support plan revision
- Supporting range monitoring as part of our strategy for coordination and consolidation. In October 2019 meetings were held with range staff to pull together Condition and Trend Data
- The DeLaSalle student interns can contribute to this effort, while also supporting our goals for working towards a more diverse workforce.

Climate Change Vulnerability Assessments (CCVAs)

Now that CCVAs throughout the Region are complete or nearly complete, it is appropriate for ecologists to work with NEPA planning teams to determine how to have them inform and integrate with planning documents.

Workforce Strategy

The ecology program currently has 17 FTEs across the Region based on National Forests (but in a Regional category that does not affect the Forest FTE cap). This reflects an approximate 3 FTEs for ecology in each of the six Areas (Zones) in the Region. There is strong Forest support to maintain these positions, as reflected in Program of Work documents. In over 20 years we have never had a Forest ask to remove an ecologist position when there was a vacancy.

There is an emerging and compelling need to meet data management needs. The new CFLRP Common Monitoring Strategy will require Regional level support. The forest structural restoration map in turn relies on the new potential natural vegetation zone and subzone maps. Supporting this will require database management support to maintain and track the tables supporting this effort.

A position that supports database management offers efficiency in addressing turnover on the Forests and is a centralized effort to support the CFLRPs. **This is in response to lessons learned and requests from the Forests to address lack of capacity**.

Options to meet this need include:

- Contracting/agreement
- Full time position
- Share position
- Term position

Currently we are working with a contractor (through an agreement) on meeting this need, but the situation is unstable because she may take another job at any time. Moreover, agreements can be difficult to perpetuate in the long run.

A full-time position would be ideal. There is interest in having this position cover CFLRP needs both Regional in scope and at the CFLRP project level. Thus, support from the Forests could be built for the position.

There are opportunities to share data management work with an existing ecology FTE or other FTE, or perhaps expand by a fraction of an FTE.

A term position of up to 4 years is also an option as it does not make a permanent commitment and serves to “test drive” the value of a position.

Area Reports

Western Washington Ecology Program (Area 1)

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

Program Priorities

In 2020, Natural Resource Staff Officers, Area Ecologists, and the Regional Ecologist agreed on the following priorities for Western Washington:

Monitoring

- Support ongoing fire monitoring, development of project monitoring plans, biennial monitoring reports, and continued review and prioritization of eco-plots for future monitoring.

Support for Planning

- Contribute to long-term forest restoration strategic planning.
- Contribute to project level planning by providing landscape context and climate change considerations.

Collaboration and Partnerships

- Work with DNR, University of Washington, PNW Research, Forest Collaboratives, and NGO partners.

Climate Change

- Serve as Forest Climate Change Coordinators. Provide input for national reporting scorecard, mid-level assessments, and project level planning analyses.

Regional Projects and Tech Transfer

- Support ecology program data, model and tools development efforts: including state and transition model development team, PNV mapping effort, DecAID, GNN, and climate change tools.
- Distribute relevant, recent research information to Forest specialists contributing to best available science for project planning analysis.

Area 1 Ecology Program Team

Jessica Hudec
Kevin James
Kim Crider
Colin Meston

Accomplishments

Western Washington Ecology Program has selected a subset of our accomplishments from 2020 to highlight.

Ecology Program Meeting

- Hosted the Annual Regional Ecology Meeting in Stevenson, WA October 28-31, 2019. The focus of the meeting was range of variability. A joint day session integrated with the Forest Health Protection included speakers covering a range of topics relevant to both programs.

Monitoring

- Served as contact for University of Washington and WA DNR monitoring research within the Norse Peak Fire burn perimeter.
- Coordinated review of early seral areas to develop a monitoring strategy and guide for the proposed treatments. Worked with planning team, collaborative groups, and research partners.
- Continued efforts to review, coordinate, and input ecoplot data toward completion of a WWA database.
- Provide data and additional input in support of compiling Forest Plan biennial monitoring reports to meet 2012 Planning Rule requirements.

Managing for early seral habitat is part of the Upper Wind Restoration Project. R6 ecologists visited the project area during the FY20 Annual Meeting.

Planning

- Led efforts for Regional Office 5-year integrated restoration plan for the Mount Baker-Snoqualmie NF, assisted in efforts on the Olympic NF. Work included preparing the restoration narrative and map to accompany response spreadsheet.
- Led efforts in developing the 10-year Vegetation Management Plan for the Gifford Pinchot NF. The Plan identifies and prioritizes large planning areas in support of flagship targets, restoration, and shared stewardship.
- Participated in review of no-bid timber sales on the MBS sponsored by a team of National and Regional Staff. Review informed challenges and opportunities for restoring ecological function to terrestrial and aquatic systems through active vegetation management.
- Completed Ecological Assessments for Yellowjacket planning area on the Gifford Pinchot NF. Work included planning team discussions, presentations to collaboratives, and incorporation of HRV, PNV, fire history, and GNN data.

Climate Change Coordination

- Serve as Forest Climate Change Coordinators working to ensure climate adaptation strategies put forward in each Climate Change Vulnerability Assessment are being considered, included, and implemented where appropriate through NEPA decisions.
- Provided input on projects addressing vulnerability and adaptation for national reporting contributions to the climate change scorecard.

Collaboration

- Partnered with Transition Fidalgo and Friends NGO for citizen science climate change monitoring.
- Participated in WA DNR 2020 Forest Action Plan development with technical team for Western Washington Restoration Strategy. Work with WA DNR on shared stewardship in implementation of planned restoration projects.
- Participated in co-management of westside fire initiative with PNW research station.

Publications, Presentations, Awards

Hudec, J.L. 2020. Range of Variability: Terminology and Concepts. Presentation at Regional Ecology Program Meeting. Stevenson, WA.

James, K. and P. Reed. 2020. Ecological Context and Management Options for the Matrix Land Use Allocation within the North Fork Nooksack Vegetation Management Project Area. Unpublished report. Prepared in support of restoration on the Mount Baker-Snoqualmie National Forest.

Meston, C. 2020. Early Seral Design and Monitoring in Upper Wind Planning Area. Presented on separate occasions to Region 6 Ecology Annual Meeting, South Zone Interdisciplinary Team, South Gifford Pinchot Collaborative Group.

WWA ecologist Kevin James received the honorable mention for the Federal Agency category for the 2020 Climate Adaptation Leadership Awards (CALA) in recognition of climate smart travel management on the Mount Baker-Snoqualmie NF. The work was a joint effort supported by Conservation Northwest and analysis supported two NEPA decisions.

Responding to Future Needs

In 2021, planning, monitoring, and partnerships will continue to be a major focus area for the Western Washington Ecology Program. Our work is integral to all levels of planning including the development of broad landscape management strategies, mid-level resource management plans, specific project implementation, and monitoring. We plan to re-measure a subset of long-term monitoring plots and install and monitor early seral monitoring plots on the Gifford Pinchot NF. Finally, Western Washington ecologists will serve as liaisons to connect the Forest Service with collaborative groups, scientists and research institutions, tribes, non-profit groups, State and Private Forestry, Washington DNR, and other entities.

Eastern Washington Ecology Program (Area 2)

Okanogan Wenatchee and Colville National Forests

Program Priorities

The priorities for 2020:

1. Support expanded pace and scale of restoration.
2. Develop shared knowledge, tools, and processes with partner agencies.
3. Communicate current science, including traditional ecologic knowledge (TEK), to managers and partners.
4. Create research and management partnerships to address new issues.

Photos: Don Radcliff's happy FFI crew (DNR) in the Eagle Rock unit collecting CFLRP post-treatment data in collaboration with our NE WA Ecology Program. The crew quarantined together as a family unit during the summer fieldwork. Left photos credit: Sienna Patton. Right Photo Credit: Michael McNorvel

Area 1 Ecology Program Team

James Dickinson, Landscape Ecologist
Monique Wynecoop, Fire Ecologist

Accomplishments

This year presented new challenges and opportunities for the Eastern Washington Zone (EWZ). Virtual meetings increased in frequency, while field work presented challenges due to a shorter field season, health risks from travel, and the cancellation of any field work that would increase employee exposure to the virus. New partnership and collaboration opportunities arose in response to the increase in virtual meetings, conferences, and webinars.

The NE WA Team annually takes the lead on multiple collaboration and science delivery efforts that will benefit our area program and region. Some highlights this year included: being invited to help co-develop a fire management plan and comprehensive summary report for the village of Loibor Siret, Tanzania; creating and releasing the first issue of the Northern Rockies Fire Science Network (NRFSN) TK & Fire in the Northern Rockies and Pacific Northwest Bi-annual Newsletter, which gained 239 subscribers between June and November, 2020; and Wynecoop being invited to serve on the NW Climate Adaptation Science Center Deep Dive Team and Planning Committee and to give the keynote address.

To ensure that we are kept up to date on the most current science, collaboration opportunities, and also sharing the story of the ecology and work being accomplished in our neck of the woods, our team continues to take the lead in coordination and participation in multiple collaboration, tech transfer and science delivery opportunities; including the co-development of monitoring and planning strategies involving the DNR 20-year strategic plan; the PNV layer, helping with the Potential Natural Vegetation Layer (PNV) accuracy assessment and improvement; co-coordinating a NE WA Tribal Fire & Fuels Research Needs Workshop with NW Region BIA and the Northern Rockies Fire Science Network; updating the Colville National Forest Fire and Aviation sharepoint site; participating in the Chewelah NE WA TREX planning meeting as Fire Ecologist; continuing the development of Fire Ecology and TK Education Tools and Lessons; and supporting the development of the WA Prescribed Fire Council's Prescribed Fire Outreach Toolkit.

Our team continues to offer local and regional guidance and support on projects, and monitoring and field efforts that foster shared learning, communication, collaboration, and adaptive management by: working on the Region 6 planning team to amend the Eastside screens supporting, vegetation and disturbance analysis, developing and supporting the vegetation modeling for Eastern Oregon and coordinating with several partners for the vegetation modeling. We also participated in the development of the Okanogan Forest Plan Amendment for allowable actions in old forest; final review of the DecAID

snag data analysis tool; integrating on the Upper Wenatchee Pilot Project with the interdisciplinary team; LSR workgroup reviews. Significant collaboration also occurred with Washington DNR for shared efforts on CFLRP post-treatment FFI monitoring and providing guidance and protocol for WA DNR 20 Person FFI Monitoring Crew that complete 54 Plots. We updated the CNF Fire & Fuels Monitoring Plan and provided support for the annual CFLRP Fire and Fuels Monitoring Report.

The eastern Washington area has continued to foster strong working relationships with multi-agency partners within the zone, Region 6, and Region 1. The program is well positioned to create opportunities for adaptive management as well as to develop the knowledge and tools necessary for the continued integration of new scientific understanding and stakeholder needs throughout the zone.

In fiscal 2021, we will continue to develop the mechanisms necessary to have a strong monitoring and adaptive management framework for the Colville Forest's new forest plan. We also will continue to co-develop tools for transfer of science and technology to support the changing needs of both forests.

Top Photo: James Dickinson and Upekala Wijayratne collaborating with the Tanzanian village of Loibor Siret to help develop a comprehensive fuels management plan for the community, Tanzania, Africa. Bottom Photo: Photo was taken in 2019, when a hut (boma) was burned by a wildfire, Loibor Siret, Tanzania, Africa.

Products, Papers, Publication

Products/Papers:

- 2020. Dickinson et. al. Co-authored the second CFLRP Proposal.
- 2020. Dickinson et. al. Submitted the 10-year final CFLRP Monitoring Report.
- 2020. Dickinson et. al. Submitted the Annual CFLRP Report.
- 2020. Wynecoop. Released the first issue of the NRFSN Bi-Annual TK & Fire in the Northern Rockies and PNW Newsletter.
- 2020. Wynecoop. White bark Pine Ecosystem Foundation Nutcracker Notes Article, "Making Science Delivery Socially and Culturally Relevant".
- 2020. Wynecoop. IFTDSS Case Study for the Colville National Forest Selkirk, Sullivan, Slate, and Salmo Watersheds.

Presentations:

- 2020. Wynecoop. Invited Speaker and sat on the Tribal Panel Discussion at the National Cohesive Strategy Meeting. Plymouth, MA.
- 2020. Wynecoop. Intertribal Timber Council. Invitation to speak about TEK Applications in Fire & Fuels Management. Fairbanks, AK. Cancelled due to pandemic.
- 2020. Wynecoop. Northwest Scientific Association. NW Native Foods Special Session Coordinator. Oregon. Speakers rescheduled as a Webinar Series.
- 2020. Wynecoop. AFE Podcast about research paper.
- 2020. Wynecoop. NW Climate Adaptation Science Center Key Note Address, "Promoting Ecological and Cultural Resilience in a Future of Climate and Paradigm Shifts".
- 2020. Wynecoop. Co-organize Tribal Fuels Workshop with NW BIA and the NRFSN. Present on resources and research needs and opportunities.
- 2020. Wynecoop and Wright. Rocky Mountain Research Station Brown Bag Discussion. Fostering Tribal Engagement.
- 2020. Dickinson. Coordinated, organized, and participated in an E. WA Zone-wide Range Monitoring Meeting.
- 2020. Dickinson. Presented a talk about landscape resilience at the joint FHP and Area Ecology Annual Meeting.
- 2020. Dickinson. Co-presentation (with D. Gooding) of an invited talk at a Landscape Ecology Planning Workshop. Corvallis, OR.

Responding to Future Needs

The eastern Washington Area Ecology program has responsibilities across the Colville and Okanogan-Wenatchee National Forests. We collaborate with managers from these two forests in addition to the Pacific Northwest Research station, Rocky Mountain Research Station, Tribal communities within the NW & Rocky Mountain Region, Washington State Department of Natural Resources, and The Nature Conservancy. A bulk of work that we provide is science and technology information transfer to managers. In addition, we provide input to ongoing research to help that work be directly useful for managers. The work that is carried out with other federal and non-federal partners helps to facilitate the ongoing all lands restoration and monitoring work throughout the zone. Expanding collaboration, partnerships, and the application of traditional knowledge, landscape principles, science transfer, and management efficiencies will continue to be an important emphasis in the upcoming year.

Northeast Oregon Ecology Program (Area 3)

Malheur, Umatilla, and Wallowa-Whitman National Forests

Program Priorities

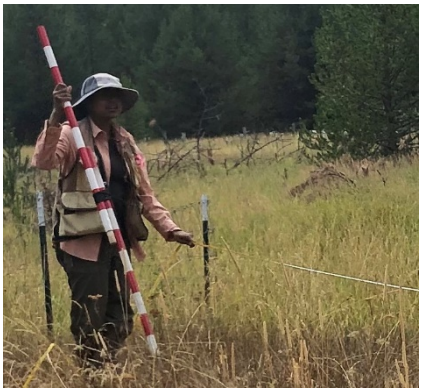
The Northeast Oregon (NEO) Ecology Team meets annually with all natural resource staff officers and other natural resource specialists to discuss program priorities, respond to assistance requests from Forest units, and to jointly build the annual program of work. As in FY2020, work in FY2021 will focus on the following priorities:

- Support projects and monitoring associated with the Southern and Northern Collaborative Forest Landscape Restoration Program (CFLRP) projects as well as the efforts of collaborative groups on all three Area National Forests (NF)
- Develop tools and strategies for landscape-level restoration (e.g., whitebark pine)
- Provide assistance to Interdisciplinary Teams for Allotment Management Plan Revisions on the Malheur NF
- Support Wallowa-Whitman NF with Climate Change Coordination
- Assist in developing silvicultural approaches to meet restoration needs of Area NFs
- Assist with long-term vegetation and habitat monitoring on Malheur, Umatilla, and Wallowa-Whitman NFs
- Provide field visit support to specialists
- Manage ecology legacy data

FY2020 was remarkable for the NEO Area Ecology Program in terms of change, not simply because of the curtailment of program activities in response to COVID-19, but also because of personnel changes. Upekala "Pek" Wijayratne, left her position as NEO Area Ecologist in July 2020 to join the NW Oregon Area Ecology Program. We were extremely fortunate to have Amarina Wuenschel (Region 5) detail July - November 2020 into the vice-Wijayratne position. Christal "Christy" Johnson, a Presidential Management Fellow, joined the Program as an Ecologist. Finally, Nathan Poage detailed November 2019 – March 2020 into the vacant position shared by the Ecology and Forest Health Protection programs in the Blue Mountains.

Accomplishments

- Supported successful application for Northern Blues CFLRP project, which was unanimously recommended by national selection panel to receive all FY2020 funding reserved for new CFLRP projects.
- Completed field assessment to determine whether MIM protocol is appropriate for spring ephemeral streams with spawning habitat.
- Developed and refined Maxent-based predictive habitat distribution models for sensitive forest mollusks and MacFarlane's four-o-clock.
- Involvement with SW Oregon / Northern California state-and-transition modeling effort in support of 5-Forest Plan Revision effort.
- Conducted plant association trainings on Umatilla NF.
- Assisted with PSU / TNC Northeast Oregon Moist Mixed Conifer Fire History Study.



Dr. Upekala "Pek" Wijayratne in action (Photo A.W.)

Area 3 Ecology Program Team

Team Members:	**Collaborators:**
Upekala "Pek" Wijayratne	Kerry Kemp
Nathan Poage	Susan Geer
Christal "Christy" Johnson	Mike McWilliams
Amarina Wuenschel (detailer)	

- Supported Colorado University / Wallowa Resources Communities and Forests in Oregon (CAFOR) project.
- Regular participation in PNW Research Station's Carbon Research Initiative's Carbon Modeling Working Group.
- Continued collaboration with University of Washington researchers to develop LIDAR-based tools.
- Continued participation on silviculturist certification panel(s).
- Completed first post-restoration riparian data collection and analysis on Big Creek, Malheur NF to support the work being done through the Southern Blues CFLRP.
- Summarized new riparian-area fire ecology research (Harley et al. 2020) into R6 Ecology Program Brief.
- Surveyed for rare plants in Muddy Sled Rx Burn project area on the Wallowa Whitman NF.
- Conducted riparian restoration monitoring in Sheep Creek of the Wallowa Whitman NF.
- Continued assistance to Tanzania People & Wildlife in Loibor Siret, TZ through International Programs.
- Continued to provide technical assistance, vegetation data, and geospatial analytical products to natural resources specialists, leadership teams, and collaborative groups on all three Area NFs.

Impact of whitebark pine blister rust on young whitebark pine (Photo A.W.)

Products, Papers, and Publications

Poage, N. 2020. Range of Variability (presentations). Northern Blues Forest Collaborative (May 28, 2020) and Sustainable Northwest's PNW Forest Collaborative Workshop Webinar Series on July 17, 2020.

Lash, K. and U. Wijayratne. 2019. Whitebark Pine (*Pinus albicaulis*) Survey: Wallowa Mountains, Oregon. ISSSSP Report.

Wijayratne, U., M. McWilliams, K. Chadwick, J. Lippert. 2019. Whitebark Pine (*Pinus albicaulis*) Permanent Monitoring Plots. ISSSSP Report.

Wuenschel, A., C. Johnson, N. Poage, K. Kemp. 2020. Northern Blues Collaborative Draft Monitoring Framework

Dendrochronological sampling for with the PSU / TNC Northeast Oregon Moist Mixed Conifer Fire History Study (Photos C.J.)

Responding to Future Needs

As the Umatilla and Wallowa-Whitman NFs begin implementing projects associated with the recently awarded Northern Blues CFLRP projects and the Malheur NF continues implementing Southern Blues CFLRP projects, we anticipate a bigger role for our team within the context of multi-party monitoring.

Develop spatially explicit, desired future riparian conditions within valley bottoms and describe appropriate management actions.

We also anticipate playing a key role in landscape assessments as the forests engage in strategic and landscape scale planning.

Central Oregon Ecology Program (Area 4)

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

Program Priorities

The Central Oregon Area Ecology Team met priorities for 2020 which included several long-term projects:

- Provide riparian, meadow, and fen ecological expertise, conduct monitoring of ecological status attributes for Rangeland Allotment Management Plan renewal NEPA process.
- Provide Landscape Assessment-Departure Analysis support for vegetation to Area 4 National Forests & Grasslands.
- 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.
- Provide program support to Region, Forest, and Ranger Districts.

Accomplishments

Effectiveness Monitoring

- Measured streambank vegetation using Multiple Indicator Monitoring (MIM) protocol, Ochoco NF.
- Located established and new effectiveness monitoring plots for the Lakeview BLM District and the Fremont-Winema NF in the Warner Mountains.
- Measured vegetation attributes and updated the Ecological Site Description (ESD) database for the Crooked River National Grassland.
- Rare plant monitoring and survey assistance for Botany Programs on the Fremont-Winema and Ochoco NFs.
- Assisted with whitebark pine permanent plot

Calibrating observer estimates of streambank alteration is critical to maintaining high standard data collection for MIM riparian monitoring of livestock grazing impacts. Denine Schmitz (r) demonstrates her technique as Cristina McKernan, Jacob Young, and Steve Gibson (l to r) discuss alternatives. North Fork Wind Creek, Ochoco NF. Photo by Gregg Riegel, 9/12/20.

Area 4 Ecology Program Team

Gregg Riegel, PhD
Cristina McKernan
Kelly Smith
Jason Wilcox
Mike Simpson
Denine Schmitz
Kristen McBride

Cooperators: Steve Gibson, Ben Goodin, Jim David, Jacob Young, Jennifer Ferriel, Erin Rentz, Jenny Carson, Jimmy Leal (BLM), Les Boothe (BLM)

Planning

- Continued work on Region-wide Potential Natural Vegetation (PNV) mapping. Continuing to support PNV mapping part of Plan Revision assessment in SW Oregon/Northern California.
- Landscape Assessments for Twin Project on the Deschutes NF, and Blue Mile Project on the Fremont- Winema NF.

Technology Transfer

- Mentoring; Denine Schmitz returned for a second promotional detail, her first was in 2018, (Vale District BLM). Denine began her new role as the Blue Mountain District Hydrologist on 12/7/20.
- Deschutes Collaborative Presentations: 1); Bitterbrush Ecology and Response to Fuel Treatments, 2) Lodgepole Pine Understory Vegetation Ecology, 3).
- Ochoco Collaborative.
- National Cadre Instructor: Implementing Indicators of Rangeland Health.2019 classes Winnemucca, NV and Prineville, OR
- Regional Cadre Instructor: Rx 310 Fire Effects Flora Module, PNW Training Center.
- Courtesy Faculty Member, OSU: Claire Tortorelli PhD Candidate, *Ventana dubia* invasion potential, grass-fire cycle and community dynamics in eastern Oregon (committee member). Past President (Executive Officer) of the Northwest Scientific Association.

Products, Papers, and Publications

McCaskill, G, **Gregg Riegel**, and Matt Busse. Intensive burn frequency favorably affects stand structure and growth in an old growth ponderosa pine forest in central Oregon. Forest Science. *Accepted*

Pellant, M., P.L. Shaver, D.A. Pyke, J.E. Herrick, N. Lepak, **G. Riegel**, E. Kachergis, B.A. Newingham, D. Toledo, and F.E. Busby. 2020. Interpreting Indicators of Rangeland Health, Version 5. Tech Ref 1734-6. U.S. Department of the Interior, Bureau of Land Management, National Operations Center, Denver, CO.

Identifying peat depth, water table depth, and plant species composition are the key attributes that distinguish a fen from a wet meadow. This field trip provided the impetus to develop a comprehensive monitoring proposal that addresses these attributes for the FRE-WIN NF, which has been under litigation for livestock grazing issues since 2009. Internationally recognized fen expert, David Cooper (Senior Research Scientist/Professor, Colorado State Univ.) explains the complex role of peat depth function to (l to r) Rick Dewey (Retired DES NF Asst. Forest Botanist), Denine Schmitz, Cristina McKernan, Erin Rentz (West Zone Botanist FRE-WIN) Sandra Klepadlo Girdner, (Asst. West Zone Botanist FRE-WIN) and Dave Weixelman (Retired USFS R5 Regional Range Ecologist). Photo by Gregg Riegel, Little Parker Fen, Antelope Allotment 10/13/20.

Responding to Future Needs

Effectiveness monitoring of livestock grazing on rangeland and riparian vegetation. Discerning grazing effects from hydrologic flux in a changing climate is key to understanding management impacts.

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

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

Provide expertise in monitoring design, data management, analysis, and interpretation of complex issues.

Support District, Zone, and Forest project-level NEPA and Forest Planning.

Meeting of the Soiled Minds In preparation for an Interpreting Indicators of Rangeland Health class on the Crooked River National Grassland, cadre members discuss diagnostic soil characteristics that identify an Ecological Site utilizing Jim David's trusted truck mounted backhoe (l) (Forest Soil Scientist, OCH NF, Prineville). Cadre members in this photo (l to r) are David Pyke (Research Ecologist, USGS, Corvallis) Jennifer Moffit (Soil Scientist, NRCS, Redmond), Mike Pellant (Rangeland Ecologist, BLM, Boise, retired), Gregg Riegel, (Area Ecologist, USFS, Bend), and Pat Shaver (Rangeland Management Specialist, NRCS, Corvallis, retired). Photo by Nika Lepak (Rangeland Management Specialist, BLM, Boise) 5/20/19.

Southwest Oregon Ecology Program (Area 5)

Rogue River-Siskiyou and Umpqua National Forests

Program Priorities

The Southwest Oregon Ecology Program works with the forest Natural Resources Staff Officers and Forest Supervisors and Deputy Supervisors to develop a program of work and determine priorities. We worked closely with both Forest Leadership Teams so that we were aligned with Forest priorities. Throughout the year we worked closely with Forest natural resource program managers and specialists as well as our local collaboratives to strengthen our support for forest planning and restoration. In addition, we also responded to requests for help from program managers, planners, and ID teams as needed. We have continued to develop working relationships with District staff on both Forests.

Program priorities for 2020 included:

- Continuing our support of large-scale forest restoration planning and implementation on both Forests.
- Assisting in developing and writing a CFLRP proposal for the Rogue River-Siskiyou NF (successfully funded).
- Supporting Ecology Program priority to refine state and transition vegetation models for SW Oregon.
- Working closely with Forest Leadership Teams to offer ecological assessments for planning areas.
- Supporting the Ecology Programs goal to complete the new R6 Potential Natural Vegetation (PNV) map.
- Along with planners in R5 and R6 and other ecologists in R5, we began the pre-assessment of the ecological integrity of terrestrial ecosystems across the five Forests of the Klamath Mountains region.
- Maintain strong working relationships with the local collaboratives, interested stakeholders, and other agency staff to further shared understanding and goals.

Accomplishments

- Assisted with development of the Collaborative Forest Landscape Restoration Program proposal for the Rogue River-Siskiyou NF. The proposal was selected for future funding.
- We worked to document the genesis and understand and update existing state-and-transition models for SW Oregon to reflect accurate transitions for disturbances, including fire, insects, and disease.
- We compiled a database of disturbance history for SW Oregon forest types to ensure correct parametrization of state-and-transition model transition rates.
- Using the Lower Jackson Creek planning area on the Umpqua NF as a pilot, we added to an existing General Lands Office survey database with the goal of describing historic forest structural and compositional conditions in support of restoration goals.
- We assisted in managing the Rogue Forest Restoration Initiative OWEB grant – a $6 million, six-year grant to support dry forest restoration treatments on public and private lands in the Rogue River Basin.
- We continued our close involvement as members of the team working on developing a new Region 6 potential natural vegetation (PNV) map. Pat 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.

Area 5 Ecology Program Team

Bill Kuhn
Pat Hochhalter
Summer Kemp-Jennings (through June 2020)
Devin McMahon (August 2020 – present)

- We hosted Paul Chisholm who detailed into the Umpqua Ecologist position. Paul assisted with General Lands Office data for the Umpqua, and the LSR Assessment update for the southern Cascades LSRs.
- Wrote successful application to ODF Planning Assistance and Categorical Exclusion grant program with $45,000 awarded to RRS for LIDAR data modeling across most of the forest.
- We assisted in developing a 10-year program of work for the Rogue River-Siskiyou, using the Rogue Basin Cohesive Forest Restoration Strategy to analyze and select future restoration areas.
- Summer K-J participated in a detail on a Regional planning team that examined 21" limits to tree harvests in eastside forests.
- In late summer, we began the pre-assessment of the ecological integrity of major terrestrial ecosystems within the five Forests of the Klamath Mountains region (including the Rogue River-Siskiyou NF).
- We continued work on updating the LSR assessments in portions of the southern Cascades across both forests.
- We continued monitoring of big huckleberry populations within the Huckleberry Special Interest Area on the Umpqua Divide.
- We continued our involvement in the implementation and monitoring of the Ashland Forest Resiliency (AFR) project within the Rogue River-Siskiyou National Forest.
- We continued to act as climate change coordinators for both forests and supported the FY 2020 Climate Change Score Cards for both Forests.
- Conducted downed wood and snag analyses (DecAID) for both Forests to assist with forest planning and restoration goals.
- Both Pat and Devin supported wildfire suppression teams on both Forests during the summer of 2020.
- We supported the efforts of the Southern Oregon Climate Smart collaborative group to inform Rogue River-Siskiyou restoration planning and implementation.
- We assisted in preparing two Forest Health Protection monitoring proposals on sugar pine status and trends and health in SW Oregon.

Products, Papers, and Publications

Publications:

Halofsky, J. E., J. J. Bronson, W. C. Schaupp, Jr., M. P. Williams, B. K. Kerns, W. A. Kuhn, C. Maxwell, J. B. Kim, and R. M. Scheller, In press. Chapter 5: Climate Change Effects on Vegetation and Disturbance in Southwest Oregon. In: Halofsky, J. E., D. L Peterson, and R. A. Gravenmier (Eds.), Climate Change Vulnerability and Adaptation in Southwest Oregon. USDA Forest Service, Pacific Northwest Research Station, Gen. Tech. Rep. PNW-GTR-xxx.

Presentations:

"Umpqua National Forest Restoration Priorities: Wildfire Risk and Other Objectives." Presentation to the Umpqua Forestry Coalition, Roseburg Oregon, October, 2019. (Kuhn & Kemp-Jennings).

"Climate Change & Vulnerabilities for Landowners in SW Oregon." Presentation for Oregon State University Extension Program, Maintaining a Healthy Forest in an Uncertain Climate. Medford, Oregon. October, 2019. (Kuhn)

"Understanding Natural Range of Variation." Landscape Ecology and Planning Workshop, Portland, OR. November, 2019. (Kemp-Jennings)

"Climate Adaptation Strategies, Tools, & Actions." Presentation for Klamath-Siskiyou Wildlands Center hosted Climate Smart Conservation webinar series. May, 2020. (Kuhn)

"Forest Ecology & Management Under Changing Climate & Disturbance Regimes." Webinar presentation to Southern Oregon Climate Action Network Coastal Chapter. May, 2020. (Kuhn)

Northwest Oregon Ecology Program (Area 6)

Mt. Hood, Willamette and Siuslaw National Forests

Columbia River Gorge National Scenic Area

Program Priorities

The Northwest Oregon Ecology Program meets yearly with its working group to discuss ecological issues and develop potential program of work ideas. Ideas are vetted, proposals are written, and work is prioritized with the steering committee of Forest/CRGNSA Natural Resource staff, Regional Ecologist, and BLM representatives.

Program priorities for 2020 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
- Providing technology transfer
- Assisting Forests with high priority issues:
  - Landscape analyses
  - Meadow management support
  - Meadow ESA recovery species support
  - Huckleberry restoration and management
- Assisting with the completion of the R6 Potential Natural Vegetation (PNV) map as well as Bioregional Assessment Area including portions of R5
- Collaborate with NRCS, R6 Soils Program

Area 6 Ecology Program Team:

The Team was in transition during FY20:
Jane Kertis - retired during FY20
Steve Acker - retired during FY20
Doug Glavich
Pek Wijayratne – joined July 2020
Wendy Peterman -acting July-October 2020
Jane and Steve – back through ACES (limited)

Accomplishments

Long-term projects

- Special habitat mapping/classification: Developed code script to run Random Forest model in Google Earth Engine to produce Special Habitat maps at 10-meter resolution. Produced map for 3D planning area on Willamette NF.
- Historical range of variability: Completed analysis for west Cascades (westside Mt. Hood NF and most of Willamette NF) using state and transition modeling. Box and whisker plots for potential vegetation type seral stage distribution ranges for entire study area, as well as sub-basin scale available.

In the field with NRCS on the Willamette NF

- Deadwood analysis: Completed deadwood analysis for 3D and QMS planning areas on the Willamette NF. Completed deadwood wildlife tolerance analyses for the Sand Lake planning area on the Siuslaw NF. Mentoring new ecologist on deadwood and DecAID.
- Climate Change information exchange: Co-authored vegetation/disturbance and ecosystem services chapters, as well as provided vegetation data support to the Wildlife Team for the Coast Range climate change vulnerability assessment.

- Tools for riparian vegetation management: Completed vegetation assessment for Quartzville-Middle Santiam and 3D planning areas on the Willamette NF. Completed draft version of vegetation assessment for Headwaters Sandy River subwatershed on the Mt Hood NF. Manuscript submitted to scientific journal in October 2020.

Technology transfer:

- Plant Association Training– Coast Range Dry Forest on BLM, and Cascades west slope on Willamette NF canceled due to COVID 19.

Forest high priority issues

- Landscape Analyses- 3D planning area landscape analysis with McKenzie River IDT. Assessed landscape drivers, historical condition, current condition in the context of patterns and function. This was a landscape ecology learning opportunity for district staff and a mentoring opportunity for new ecologists.
- Meadow Management Support: Initial analysis of Marys Peak Meadow Restoration Project monitoring data --species change tables for external partner.
- Meadow Butterfly Habitat: Continued support in threatened species (Oregon Silverspot Butterfly (OSB)) recovery. Trained district staff in NWO Ecology developed violet (OSB larval food source) abundance/leaf area estimate methods and staff completed data collection to update mapping needs.
- Huckleberry restoration and management: NWO Ecology/Mt Hood team completed draft huckleberry monitoring field protocol.
- Landscape analysis (biophysical settings, geology, and current vegetation/stand conditions) for Franklin & Wasson Creeks Wild and Scenic Rivers designation process.

Collaboration

- Regional Potential natural vegetation mapping—Worked on components to finalize PNV map, completion expected in FY21.
- Collaboration with Natural Resource Conservation Service (NRCS) on the Willamette NF within Major Land Resource Area (MLRA) 3. Continued field support for plant association work in soil map units and developed state and transition models for use in provisional Ecological Site Descriptions.

Products, Papers, and Publications

Acker, S., J. Kertis, W. Peterman, U. Wijayratne. Developed forested Ecological Site Groups (ESGs) in collaboration with NRCS. ESGs will be publicly available through the Ecosystem Dynamics Interpretive Tool (EDIT) and Web Soil Survey.

Supporting Threatened Species Recovery: surveying Oregon Silverspot Butterfly food source availability (violets), Siuslaw NF

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.