

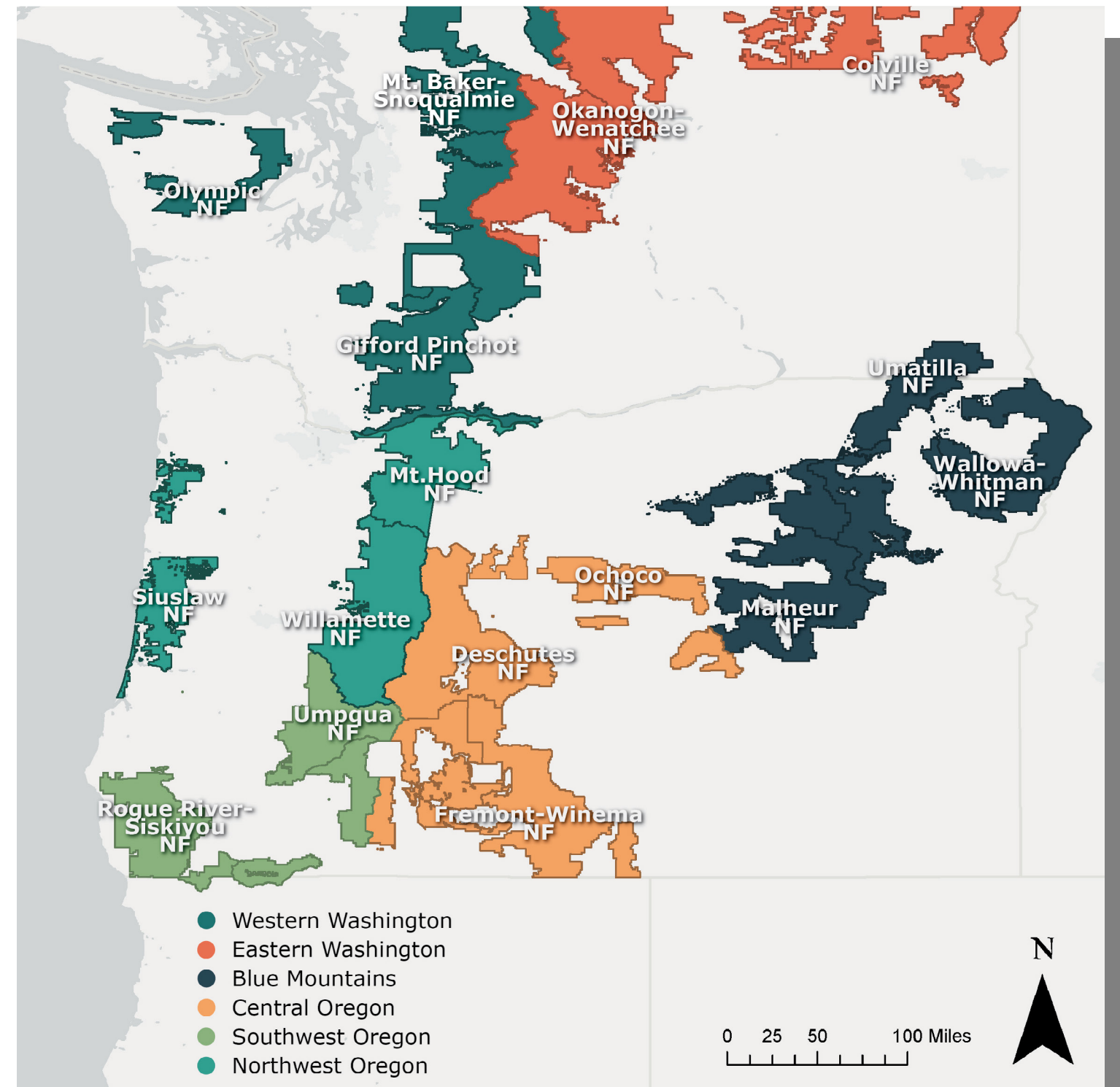


# **SUPPORT TO PLANNING**

**2024 Yearbook of the  
Ecology Program  
USDA Forest Service  
Pacific Northwest Region**

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# LAND ACKNOWLEDGMENT

The Ecology Program gratefully acknowledges we work on the ancestral lands of many Tribes in the Pacific Northwest. We deeply respect their wisdom developed over millennia, and seek to work with them as partners in land stewardship.

One recent example of partnerships we seek to foster in the future:

Over the past two years we have been collaborating with the Confederated Tribes of the Umatilla Indian Reservation, the Pacific Northwest Region hydrology program, the Pacific Northwest Research Station, and other partners on an integrated restoration and research project at Meadow Creek on the Wallowa-Whitman National Forest. This innovative project, the first aquatic landscape restoration project in the Region, featured significant involvement from the Tribes right from the beginning, and emphasizes restoring and maintaining First Foods. The ecology program has been contributing to the terrestrial assessment and restoration of upland habitats, working closely with all concerned to maintain First Foods, restore upland habitats, and design treatments to foster research goals. — Courtesy of Tim Sexton, Klamath Tribes, Fire Program Mgr.



A Klamath Indian squatting next to a fire scarred ponderosa pine amongst a robust understory of fire adapted snowbrush.

Curtis E. S. (ca. 1923). In the forest—Klamath [photographic print]. Edward S. Curtis Collection, LC-USZ62-136575. Library of Congress, Prints and Photographs Division, Washington, D.C.



# MISSION STATEMENT

The Ecology Program is a network of ecologists applying science to serve the National Forests in the Region through the following core services: climate change, landscape assessment, technology transfer, monitoring, support to planning, partnerships, and products (maps, publications, and databases). Many of these services support climate change adaptation. The Area Ecologists work as equal partners with other disciplines, the PNW Research Station, Forest Health, and external partners. They work 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. Ecologists are a bridge between science and implementation.

# PROGRAM OVERVIEW

The Regional Ecology Program today has a terrestrial emphasis and is organized into 6 areas or zones. Area Ecologists carry out a program of work crafted to each National Forests' needs. The Regional Ecologist, representing Regional leadership, ensures issues at the regional scale are incorporated into the program.

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.

In FY22, at the direction of the Regional Investment Board, the Regional Ecology Program Steering Committee (SC) was formed to exchange information, promote integration, and provide advice and direction to the Program. The SC is led by the Natural Resources Director, and includes the Directors of Resource Planning and Monitoring, Fire and Aviation, and State, Private, and Tribal Forestry, as well as the Assistant Director for Vegetation Management and Ecology. Also included are two Forest Supervisors from the Eastside and two from the Westside, on a rotating basis. Finally, the SC includes a representative from the Pacific Northwest Research Station and the Regional Tribal Liaison. The SC met twice during 2022. After a hiatus, the SC will soon be meeting again.

The Regional Ecology 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. Ecologists do not count toward Forest-level head count caps.



# CORE SERVICES: THE SEVEN PILLARS

In Region 6, there are seven ecology programs: Western Washington, Eastern Washington, Blue Mountains, Central Oregon, Southwest Oregon, Northwest Oregon, and the Regional Office. Each area may cover a number of National Forests (NFs), grasslands, and scenic areas owned by the federal government. Accomplishments are categorized into core services that are referred to as “The Seven Pillars”. These serve as the foundation for the R6 Ecology Program. The following pages will include each area’s accomplishments categorized into these pillars.

## 1. Climate Change

Climate change is the overriding environmental issue of the 21st century, affecting all aspects of our lives. Our program works closely with Thomas Timberlake, the Regional Climate Change Coordinator, to implement the vulnerability assessments that have been prepared for each of the areas in the Region. Specifically, we support planning teams with technical assistance in using this information in the planning process. We also work with the research community on using climate change modeling, such as expected changes in water availability, to inform our landscape assessment.

## 2. Landscape Assessment

Land stewardship today means looking at different scales on the landscape, and how they interact. Ecologists, working in the area (zone) framework, are well placed for a landscape perspective. We provide mapping and other tools to assess landscapes, notably the annual update of the Region-wide departure map. The assessment of how landscapes are departed from a natural (sustainable, resilient) condition has become a standard, critical tool in the assessment phase of planning. It is a core component of the Wildfire Crisis Strategy, the assessment phase of plan revision, and monitoring of the Collaborative Landscape Projects (CFLRPs). We also collaborate with other disciplines in supporting mapping of fire risk, watershed condition, and other applications.

## 3. Technology Transfer

The concept of technology transfer, or science delivery, has evolved over the years from a top-down delivery of information to the masses, into an emphasis on mutual learning. Our communication is varied and expanding. Areas conduct plant association trainings annual, a key building block of silvicultural prescriptions and other applications. We hold seminars on important topics and new products, such as the rollout this year of the Terrestrial Ecological Unit Inventory (TEUI) portal. We maintain an open website (ecoshare.info) for sharing information. And ecologists are always available for troubleshooting problems at the Forest, Area, and Regional levels.

## 4. Monitoring

Monitoring is a critical part of land stewardship, but often neglected. Leadership is often skeptical of monitoring, fearing its costs, complexities, and delays. Over the years, we have sought to overcome the known failures of monitoring to craft efforts that are simple, practical, and reflective of the resources available. We emphasize the continuum of evidence—realizing that not all questions require expensive, time-consuming monitoring, and mindful of the need for prompt reporting to inform leadership decisions. All these principles have been incorporated into the CFLRP monitoring process for well over 10 years, and were used to build the CFLRP Common Monitoring Strategy, now in its third year of implementation. They are also being used to influence the developing monitoring strategy for the Wildfire Crisis Strategy.

## 5. Support to Planning

As ecology is an integrated science, so do many of our efforts integrate to support the planning process at project, Forest, and Regional levels. Landscape assessment is a core service in the early stages of the NEPA process. Technology transfer informs the planning process, providing a better sense of what is possible and what is not. Monitoring evaluates what we do, and informs the decision process to foster adaptive management. The Ecology program is actively supporting the planning process on many efforts, such as the Meadow Creek Collaborative Aquatic Landscape Restoration Project (CALRP), where we are closely collaborating with Tribal, hydrology, fisheries, wildlife and silvicultural colleagues to help provide the terrestrial component of this effort.

## 6. Partnerships

The Ecology Program does not survive without networking and partnerships to support the work of the Agency. The Nature Conservancy was instrumental in helping us build departure maps, and the University of Washington is a key partner in maintain the maps and researching how climate change is affecting departure. We are collaborating with the University of Montana on what the future of potential vegetation may look like. We work closely with biometrics on old growth, wildlife on DecAid, silviculture on timber projects, soils with TEUI, hydrology on the Meadow Creek CALRP, fire on the Wildfire Crisis Strategy... The list goes on.

## 7. Products

The Ecology Program has over the years generated an array of useful products to assist the Forests and others. We have the legacy of plant association and plant indicator guides covering the Region, available at ecoshare.info or on the TEUI portal. (Limited hard copies are also available.) Recently, after a multi-year effort, a new potential vegetation map was produced, covering the Region and is now available. Because PNV is the framework for Fire Regimes, this will be used to update the departure map and other applications. A General Technical Report (GTR) is also being prepared to accompany the map. Materials are available on the TEUI portal.

# REGIONAL OFFICE

Portland, OR



**Tom DeMeo**  
Regional Ecologist



**Skye Greenler**  
Regional Biometrician  
*(Previously Ecologist)*



**Cheryl Friesen**  
Science Liasion  
*(Volunteer)*



**Claire Tortorelli**  
Ecologist  
*(split position with PNW Research Station)*

## Climate Change

As a program, we continue our collaboration and support with Thomas Timberlake, the Regional Climate Change Coordinator. Ecologists in many cases serve as the Forest Climate Change Coordinator, and seek to incorporate the findings of the climate change vulnerability assessments into the NEPA process. This is being implemented for both landscape scale planning and local Project NEPA.

## Landscape Assessment

Ecologists participate in landscape assessment for project NEPA, and are valued for our sense of the multi-Forest landscape context. There are numerous examples of this in the Area reports that follow.

At the Regional Office, we maintain the Regional ecological departure map. Departure is a useful approximation of landscape sustainability and resilience. Built on concepts of Fire Regime Condition Class, the current departure map is far more sophisticated and allows us to estimate, for each 5th field watershed, the number of acres, by seral stage and vegetation type, in need of disturbance, succession, or a combination of disturbance and succession.

Under the leadership of Skye Greenler, and in collaboration with the University of Washington, we produce an annual update of this map. The update reflects changes in seral stages based on wildfires, as well as our treatments of thinning and prescribed burning. The map, and associated documentation, are available at TEUI R6 Hub

Also, in cooperation with the University of Washington, as well as other colleagues, we are seeking to incorporate climate change into this assessment. This would become a future range of variation, and will probably involve identifying how water balance deficit would affect potential vegetation types. We will be holding a webinar on this topic in early- to mid-2025.

## Technology Transfer

Ecologists in the Region produce specific trainings throughout the year, on plant associations and a variety of other topics. At the Regional Office, we have been building our network with Tribes, participating in three trainings on fire Resource Advising in 2024. In 2025 we will be leading an online resource advisor course (N-9042), taking over from Cedar Drake at the Park Service.

In 2024 we also brought the ecoshare website (Ecoshare - Home) back on line, after a long period of evaluation and reconfiguration by Forest Service CIO. Many thanks to Cheryl Friesen for her work facilitating this, and to Karin Hernandez, who now provides ongoing maintenance.

## Monitoring

Monitoring is one of the seven pillars of our program, and through painstaking experience, we have shown we know the most effective ways to do it. Some ways we contribute:

- In cooperation with the Washington Office, we developed the Common Monitoring Strategy for Collaborative Landscape Projects (CFLRPs), now implemented on CFLRPs across the country. Our departure map is a core component of this.
- In collaboration with the Pacific Northwest Fire Science consortium, we are participating in fuels monitoring trainings for Tribes in the Northwest.
- We serve as extended team members for the Northwest Forest Plan Amendment, seeking to insure potential vegetation (PNV) is used as an organizing principle in the document. PNV provides the framework for fire regimes and a way to under-



Ponderosa Pine and Douglas fir seedlings in a prescribed burn unit in the Dollar Project Area surrounded by mature trees on the CNF.

stand and display them in planning for old-growth, wildlife habitat, and other applications.

## Support to Planning

The Pacific Northwest Region (R6) Ecology Program has as one of its program pillars Support to Planning. Ecologists are valued for their multi-forest landscape perspective, landscape assessment products, and skills in areas such as climate change evaluation, old-growth determination and management and wetland delineation, as well as implementing successful monitoring programs (“the left side of the NEPA triangle”).

During FY24 Skye Greenler made significant contributions to the Wildfire Crisis Strategy (WCS), serving as a core member of the Regional WCS team. The WCS mission is to focus restoration and fire risk reduction efforts in key areas of the Region. Skye’s specific accomplishments include:

- Co-led development and rollout of the R6 WCS Prioritization Framework for Mt. Hood National Forest.
- Led development and rollout of Region 6 WCS Outcome Tracking Framework.
- Assisted Klamath Basin WCS landscape with development of landscape prioritization plan that spanned R6 and R5 and brought together R6 tools and work with Vibrant Planet LandTender Prioritization tools contracted through Region 5 .



- Contributed to the following briefing papers at the request of WCS landscapes (but with utility beyond WCS landscapes) .
  - Vibrant Planet’s Land Tender Prioritization Tool.
  - Use of the Region 6 Departure Analysis to Evaluate Fire Regime Condition Class.
- PNW WCS Science Strategy Implementation Team Lead for Goal 4 “Learn and Adapt”.
- RO WCS POC and Collaborator on RDBIL Projects:
  - Wildland Fire Smoke and Emissions Tradeoff Decision Support
  - Strategic prefire planning and incident response using risk assessments and PODs.
- Selected Presentations given in support of WCS:
  - Region 6 Wildfire Crisis Strategy Investment Landscapes Prioritization Framework. Natural Resources Brown Bag Lunch Seminar. October 11, 2023.
  - Region 6 Wildfire Crisis Strategy Investment Landscapes Prioritization Framework. Oregon Prescribed Fire Tabletop Discussion Group. October 19, 2023.
  - Region 6 Wildfire Crisis Strategy Investment Landscapes Prioritization Framework. Central Oregon Collaborative PODs Development Workshop. October 20, 2023.
  - Region 6 WCS Outcome Tracking & Sharing Update, R6 WRRIT Coordination Group. June, 26, 24.
  - Region 6 Wildfire Crisis Strategy Investment Landscapes Prioritization Framework Development and Use on the Mt. Hood WCS Landscape. Washington Office Wildfire Risk Reduction Infrastructure Team Point of Contact Call. June 28, 2024.

- Wildfire Crisis Strategy Prioritization & Climate Vulnerability. Turkey Cochoran Fellowship Delegation. July, 25, 2024
- Region 6 Wildfire Crisis Strategy Investment Landscapes Prioritization Framework Development and Use on the Mt. Hood and Central Oregon WCS Landscapes. Wildfire Risk Reduction Infrastructure Line Officer Call. September 13, 2024.
- Region 6 WCS Outcome Tracking Overview and Rollout. Region 6 WRRIT Leadership and Specialists. September 16, 2024.
- Audrey Maclennan (for most of the year serving as the Regional Fire Ecologist, now an ecologist with the Northwest Oregon Ecology Area) and Max Wahlberg (of the Central Oregon Ecology Area) also made significant contributions to the WCS effort.

The “3+1” timber planning concept is directed by a Regional Forester letter of August 25, 2022. Each Forest should maintain at least 3 years of NEPA shelf stock and one year of prepared shelf stock.

This in turn implies a successful NEPA process of assessing key resources and describing effects on them. Ecology contributes significantly to subregional planning projects such as the Wildfire Crisis Strategy and the amendment to the Northwest Forest Plan (NWFP). In the climate change arena, most Forest coordinators are ecologists, and they are playing a key role in working with Regional Coordinator Thomas Timberlake in the practical use of the climate change vulnerability assessments in the NEPA process. Ecologist Pek Wijayratne, in cooperation with Regional Wildlife Ecologist Andrea Lyons and the ecologists, leads the Region’s DecAID effort, assessing snag and downed wood needs for proposed projects.

Some specific examples of how ecologists have supported the NEPA process, by implication supporting the “3 + 1” timber planning process:

## Northwest Oregon Area

- Climate change analysis/report, Mt. Hood:
  - Hootnanny Insect and Disease CE
  - Stone EA
  - Gibson Insect and Disease CE
  - Grasshopper EA
- Climate change analysis/report, Siuslaw:
  - North Fork Smith River EA
- Wildfire Crisis Strategy prioritization framework– Discussions at district level for planning.
- Integrated Vegetation Management, Willamette:
  - Predicted timber output for the next few decades
  - Integrated fuels and restoration prioritization
- National Old-Growth Amendment (NOGA) and NWFP
  - Fuels
  - Climate refugia
  - Eastside tree age
- Regional DecAID Science Team– Used in most NEPA projects

## Southwest Oregon Area

### Rogue River-Siskiyou:

- With CFLRP funding, we and several partner organizations worked closely with Vibrant Planet to develop their assessment and prioritization tools across the entire Forest. We are helping Planners and ID Teams use this tool for two new planning areas: 70K acre Yellowjacket project (Siskiyou Moun-

tains District) and 19K acre Grayback Creek project (Wild Rivers District).

- We have and continue to support planning for the Snowy Butte project in the High Cascades District, with signed decision expected in 2025. We have provided spatial data support, prioritization analysis, climate adaptation recommendations, and participated in several field visits with partners to discuss project goals and proposed activities.
- We are using Vibrant Planet platform analysis and available spatial datasets to identify future priority planning areas for the entire Rogue River-Siskiyou.
- We are supporting the emerging Yellowjacket planning area in the Siskiyou Mountains Ranger District with Vibrant Planet restoration analysis and fuzzy logic prioritization analysis using available spatial datasets. We are working closely with the ID team to identify restoration opportunities and priorities.
- Using available spatial data and Vibrant Planet tools, we are assisting the ID team and involved partner organizations to identify restoration opportunities and priorities for the new Grayback Creek Watershed Ecological Restoration project on the Wild Rivers Ranger District.

### Umpqua:

- Wrote climate change analysis and contributed to old growth review and PNW research station coordination for Buckeye project (Tiller District). Provided best available science to inform decision on largest tree diameter to harvest for old-growth restoration objectives.
- Facilitated Interdisciplinary Team identification of climate change vulnerabilities and adaptation options for Southwest Tiller Fuelbreaks project.
- Contributing climate resilience and landscape pattern information to the developing North Zone Thin project (preliminary analysis area, 188K acres on three districts), as a core member of the Mid-level Assessment team tasked with assessing the

existing conditions and defining the desired conditions and proposed actions for each discipline. Helping to organize team discussions in the field (postponed by fire season). Collecting data on previous thinning projects, 10-20 years after implementation, to inform proposed actions.

- Continuing to lead Umpqua Resilient Landscapes long-term planning group to identify and prioritize future planning areas forest wide.
- Leading postfire assessment with Umpqua staff and Great Basin Institute partners, to inform potential projects following 2020-23 fires.

### Central Oregon Area:

- Significant contributions by Max Wahlberg to Wild-fire Crisis Strategy landscape planning for Central Oregon and other areas.
- Regional “first pass” mapping of old growth as part of the mandated old-growth review process.

### Blue Mountains Area:

- Blue Mountains Forest Plan Revision: Wrote and synthesized historical range of variation best available science review and modeling (forest component). Analyzed invasive species information. Reviewed new science literature relevant to grazing systems. Conducted a rangeland condition and trend assessment.
- Northern Blues CFLRP Monitoring Team, Wallowa-Whitman and Umatilla NFs. Serve as Monitoring Coordinator. Attended and participated in regular meetings with the Northern Blues Monitoring

Team. Reviewed and suggested edits and revisions to the Northern Blues All-Lands Multi-Party Monitoring Plan and abbreviated one-page summary. This monitoring work supports the adaptive management cycle within the Northern Blues CFLRP by providing information on the effectiveness of management strategies to inform and adjust planning of future management.

- Development of a riparian fire regime, forest conditions, and change dataset for the Red Cougar Project. These products will inform silvicultural design and project planning in riparian forest systems.
- Sheep Creek Vegetation Management Project, Wallowa-Whitman NF. In partnership with District Botanist and US Forest Service, US Fish and Wildlife Service, and Wallowa Resources partners in developing protocols and establishing plots to monitor thinning and prescribed burning treatment effects on low-elevation populations of whitebark pine. This monitoring effort will help to inform forest and whitebark pine (listed as a threatened species on the Endangered Species Act in January 2023) management planning efforts in these lower elevation stands with intermixed suppressed whitebark pine.
- Whitebark pine suitability model refinement and consultation. The spatial model aids in consultation with regulatory agencies and survey planning for each planning project in the tri-forest region within whitebark range.
- Range monitoring. As part of a Forest Service team, we are drafting regional range monitoring strategy which will guide range monitoring in advance of range NEPA. This product was requested by the Malheur NF.
- Morgan-Nesbit Forest Resiliency Project, Wallowa-Whitman NF served as climate change and carbon specialists on the ID Team. Assisted with project design criteria development, co-wrote a climate change and carbon specialist report to in-

form the EA, and attended a Line Officer Briefing meeting.

- Suffering Springs Vegetation Management Project, Wallowa-Whitman NF. Served as climate change ID Team member. Assisted with writing and analysis for the silviculture specialist report for the project EA.
- East Face Vegetation Management Project, Wallowa-Whitman NF. Assisted with post-timber harvest stand exams to evaluate the success of commercial thinning treatments and inform planning of subsequent understory vegetation/fuels removal treatments.
- Climate refugia analysis for the National Old Growth Amendment EIS. May inform treatment types within and external to climate refugia.
- Asotin Creek Prescribed Fire Project, Umatilla NF. Compiled a monitoring plan document and conducted field monitoring of post-fire effects (from the 2021 Lick Creek Fire) and invasive plant spread in Spalding’s catchfly (*Silene spaldingii*) habitat. Spalding’s catchfly is endemic to the Palouse Region and was listed as Threatened on the Endangered Species Act in 2001.
- Tiger Mill Project, Umatilla NF. Collaborated on the creation of a monitoring plan to evaluate treatment effectiveness in returning the Mill Creek Watershed Research Natural Area and Walla Walla municipal watershed to its historic range of variability (HRV). Conducted pre-treatment field data collection in project areas planned for prescribed fire and commercial thinning treatments.
- Walter Climate Diagram Update to ArcGIS Pro and updated Global Climate Models of future climate. These models allow practitioners to integrate climate change predictions into silvicultural prescriptions on each project.
- Wallowa-Whitman NF 10-year Landscape Restoration Prioritization Analysis. Will create prioritiza-

Photo by Paige Stephens.

tion for the Wallowa-Whitman NF for all planning projects on the forest. Will be congruent the prioritization from the Umatilla NF which is a partner in the Northern Blues Collaborative.

- Harney Country Forest Restoration Collaborative Malheur NF. Collaborative work builds consensus regarding collaborative goals for Forest Service management projects, influences the implementation and planning of these management projects by promoting communication with the HCFRC and greater community, and builds rapport, relationships, and trust.
- Marten habitat modeling for the Wallowa-Whitman NF (maybe Tri-Forest). Ongoing work will aid consultation and project planning.
- Old Growth Mortality Malheur NF. Supported research on mature and old growth mortality led by James Johnston, Assistant Research Professor at the Institute for Resilient Organizations, Communities, and Environments at University of Oregon. Assisted with development of data collection protocols and field data collection and am currently contributing to the publication of this research to inform management planning of mature and old growth forests in the southern Blue Mountains.
- Shade modeling tool development for riparian forest treatment evaluation. Model will help communicate with the regulatory agencies and aid in fine scale project planning.
- Jane Hazardous Fuel Reduction Project and Dove Vegetation Management Project, Malheur NF. In the process of conducting a review of changes in

Lower Skokomish opening from Western Washington.





Ecology plot tag from Western Washington.

social license between two similar Forest Service vegetation and fuels management projects. This review will enhance Forest Service transparency and accountability with the HCFRC and help to inform future project planning efforts.

- Parker's Mill Categorical Exclusion, Umatilla NF. Co-conducted a review of replanting strategies for curleaf mountain mahogany and stiff sagebrush to support planning of effective recovery efforts for these key plant species within the project area.
- Kelly Prairie Restoration Monitoring, Umatilla NF. Supported the development and implementation of monitoring protocols to assess whether wet meadow restoration treatments (i.e., culvert replacement, road decompaction and drain installation, beaver dam analog installation, and thinning encroaching conifers) improve hydrological connectivity of the Kelly Prairie wet meadow. This monitoring is a part of the adaptive management process and will aid in planning future meadow restoration treatments.
- East Fork Big Creek Monitoring Malheur NF. Assisted with post-treatment field data collection monitoring riparian hardwood regeneration and vegetation composition and cover after streamside thinning. Results of this monitoring will help to inform planning and implementation of riparian

thinning treatments to improve riparian ecosystem health and resilience.

### Eastern Washington Area:

- Led the development and completion of an LSR Assessment update for all LSRs/MLSAs on the Okanogan-Wenatchee NF.
- Completed LSR departure analysis for Midnight, Swauk, and Chumstick to LP landscape restoration EAs and consulted with district IDTs to complete LSRA consistency analysis.
- Initiated analysis of fire regime and forest structural departure to support the Okanogan-Wenatchee Forestwide Fuels EA (ongoing).
- Coordinated with a contractor team and the WA DNR to complete a landscape evaluation for Chumstick to LP EA.
- Coordinated with a contractor team and the WA DNR to complete a landscape evaluation for the Upper Methow EA.
- Completed fire modeling exercise to evaluate treatment impacts on fire behavior in NSO habitat for use in consultation with USFWS for the Upper Swauk EA project team.
- Participated in NWFP Amendment IDT Subject Matter Expert calls.
- Coordinated with Upper Swauk & Chumstick to LP IDTs on climate change analysis and report for EAs; completed draft of climate specialist report for Upper Swauk EA, reviewed contractor climate change analysis for Chumstick to LP EA.
- Provided science support and feedback regarding public comments on Midnight Restoration DEA.
- Coordinated with the Dollar and Bulldog IDTs and helped draft climate change analysis and report for EAs, Colville.

### Western Washington Area:

- Provide landscape scale context related to developing purpose and need; provide technology transfer such as Potential Natural Vegetation map products and Gradient Nearest Neighbor datasets; address broadscale climate change considerations; share current regional and national direction as it pertains to climate change and NEPA; assist specialists with resource-specific climate change adaptation strategies.
- Provide ecological and climate change context for the Carbon River Landscape Assessment EA. [MBS Tier 1]
- Provide ecological and climate change context for the Baker River Landscape Assessment EA. [MBS Tier 1]
- Provide guidance on the incorporation of climate change adaptation into the Canyon Forest Restoration Project and other upcoming EAs. [OLY Tier 1]
- Jimmycomelately Watershed Restoration pre-planning (EA or EIS) - ecology and climate change specialist [OLY Tier 1]
- Provide climate change documentation for forest wide plantation thinning and potential control line treatment EA. Provide input on existing condition for fire and fuels. [GIP]
- Develop area, forest, and/or project specific old growth definitions and delineations; ensure project alignment with mature and old growth initiatives and National Old Growth Amendment (NOGA). [All forests]
- Prepare NWFP Consistency Project Consistency Review for North Fork Stillaguamish Landscape Analysis [MBS Tier 1]
- Participated as a full IDT member and met expectations of the Line Officer; addressed departure of ecological function, pattern and/or process and suggest desired conditions at the project scale;

helped reconcile ecological objectives with management objectives for high value resources and assets; helped specialists run resource-specific models or interpret outputs; summarized relevant literature on topics of interest; develop and implement project scale monitoring plans as warranted by the project scope and scale.

- Incorporate WA-DNR's pilot westside landscape evaluation for the Packwood area into the Skate Creek/Greater Packwood Resiliency project development/purpose and need. Liaise with WA DNR, Pinchot Partners Collaborative, and others on the project. [GIP]
- Create/implement restoration monitoring plan for Bagley Lakes Dam removal in coordination with MBS Botany Program and MBS UAS (drone) Program. [MBS Tier 1]
- Provided leadership to the IDT as needed to meet project goals and timelines on complex, ecologically focused projects.
- Co-lead Little White Salmon Project- facilitate Environmental Review Committee process with the Region, set up public comment period on the draft EA and respond to comments, complete Old Growth review process at Regional and National levels, coordinate LSR workgroup review, draft final EA, lead team through the first decision notice. Support mature forest monitoring for adaptive management. "Little White" has been lauded as one of the best assessed and most complete NEPA documents in the Region. [GIP]

### Summary

As can be seen from the above work, ecologists are playing a vital role in the successful NEPA process for a multitude of projects that contribute to timber production and other goals. We continually strive to improve our efforts to support these projects.

## Support to the Collaborative Forest Landscape Restoration Projects

The Ecology Program has supported CFLRPs since the program began in 2010. CFLRPs have become one of the most successful Forest Service ventures in its history, and the Pacific Northwest Region is a leader in this, with seven active projects. These projects accomplish significant on the ground restoration work, emphasizing the need to make landscapes more resilient in the face of wildfire threat.

Skye Greenler contributed significantly to this effort by serving as our CFLRP monitoring lead and shepherding the implementation of the Common Monitoring Strategy (CMS). The CMS is now firmly established in the Region and reported on annually.

Under Skye's leadership, we have implemented the ecological departure map as a key planning layer for the Region, not only in the CMS but in the Wildfire Crisis Strategy.

### Wildfire Crisis Strategy

Ecologists Skye Greenler and Audrey MacLennan have contributed significantly to the Region's successful implementation of the Wildfire Crisis Strategy and its implications for planning and restoration. They are key architects of the Strategy's Prioritization and Outcome Tracking Frameworks.

As a specific planning aspect of this, Skye assisted the Klamath Basin Wildfire Crisis Strategy landscape with development of a landscape prioritization plan that spanned R6 and R5 and brought together R6 tools and work with Vibrant Planet LandTender Prioritization tools contracted through Region 5.

### Communications

The program took some significant steps forward this year, with the introduction of the Ecology Briefings series—two-page documents serving as the “elevator speech—what you need to know” on key topics of vital importance, but that continue to be misunderstood.

2024 Ecological Monitoring crew technicians completing pre-treatment surveys in the Crum Prescribed Fire project area, Entiat Ranger District, OWNF.



# EASTERN WASHINGTON

## Colville National Forest Okanogan-Wenatchee National Forest

The Eastern Washington ecology program priorities center on providing science, leadership and high-level guidance on fire and forest ecology, special habitats, and landscape modeling and analysis to aid in project and landscape-level planning, assessments, and monitoring. In FY24, our priority work centered on (1) the implementation of new monitoring plans for two Collaborative Forest Restoration Projects (CFLRP), including the collection of stand-based metrics in coordination with Washington DNR, (2) providing landscape assessment and climate change expertise to project planning and Wildfire Crisis Strategy Landscapes, and (3) finalizing and assisting IDTs on concurrence analysis for an updated Late Successional Reserve assessment for the Okanogan-Wenatchee National Forest.



**Kerry Kemp**  
Ecologist



**Dana Chapman**  
Ecologist



**Emily Leung**  
Ecologist  
(Okanogan-Wenatchee)



**Frances Killea**  
Resource Assistant

Photo: Alpine larch from Gold Hill trail, Entiat Ranger District, OWNF.



## Climate Change

- Climate change coordinator for the Okanogan-Wenatchee NF. Completed and submitted Okanogan-Wenatchee FY23 Climate Action Tracker Report. Shadowed current Colville NF climate change coordinator to take over role next year.
- Attended Climate Change Resource Assistant Workshop, Portland, OR, Sept. 17-19.
- Attended Climate RA 2024 training series: bi-weekly presentations and conversations, February-March 2024.
- Participated in UW/DNR Workshop on Quantifying Climate Change Vulnerabilities of Washington's Forests. Tacoma, WA, May 22, 2024.
- Collaborated with researchers from the USFS Rocky Mountain Research Station, Vibrant Planet, Conservation Science Partners and University of Montana to complete westwide downscaled climate analog modeling effort for the Northwest.
- Coordinated with Upper Swauk & Chumstick to LP IDTs on climate change analysis and report for EAs; completed draft of climate specialist report for Upper Swauk EA, reviewed contractor climate change analysis for Chumstick to LP EA.

## Landscape Assessment

- Led the development and completion of an LSR Assessment update for the LSR/MLSA network on the Okanogan-Wenatchee NF.
- Completed LSR departure analysis for Midnight, Upper Swauk, and Chumstick to LP landscape restoration EAs and consulted with district IDTs to complete LSRA consistency analysis. (OWNF)
- Analyzed fire regime and forest structural departure to support project planning for the Okanogan-Wenatchee Prescribed Fire EA. (OWNF)
- Coordinated with contractors and WA DNR to complete terrestrial landscape evaluations for the

Chumstick to LP and Upper Methow projects to support management planning and implementation using photo-interpreted data. (OWNF)

- Coordinated and reviewed DNR landscape evaluation results and products for E. WA priority planning areas.

## Technology Transfer

- Helped resource specialists, IDTs, and forest staff interpret and utilize landscape-level datasets for planning and implementation (e.g., WA DNR Landscape Evaluations, R6 Departure Analysis, State and Transition Simulation Models, PNV, LANDFIRE, GNN, and R6 QWRA).
- Collaborated with research station partners and universities and served as a local science liaison to Forests on Central Washington Initiative fire and fuels related research projects.

### Trainings Attended:

- Range 101 Field Tour, CNF, July 17-18.
- R6 Natural Resources UAS Training, June 3-14.
- Work of Wildfire Field Workshop, CNF, June 11-13.
- DNR Forest Resilience Division Meeting, Olympia, WA, Oct. 17.
- Whitebark Pine Ecosystem Foundation Management Conference, Baker City, OR, Oct. 10-11.

## Monitoring

- Served as monitoring coordinators for the North Central Washington and Northeast Washington Forest Vision 2020 CFLRPs. Completed FY23 CFLRP Monitoring Report for the NCW and NEW Forest Vision 2020 projects.
- Established 354 stand monitoring plots across the Okanogan-Wenatchee and Colville National Forests working with DNR's Forest Resilience Division.
- Started a new collaborative monitoring effort with Confederated Tribes of the Colville and CNF's botany program to monitoring huckleberry treatment

responses. Established 27 monitoring plots in different treatment prescriptions across the Dollar Project area.

- Completed the remaining 15 invasive plots needed across the NEW VISION 2020 CFLRP project areas on the CNF.
- Assisted CNF's Natural Resources Program Manager in the required Best Management Practices (BMP) monitoring needed for the year.
- Assisted in monitoring efforts done by CNF's Botany program around Tonasket and in the Dollar Project Area.
- Established partnership agreements with 5 different partners (Klamath Bird Observatory, Cascade Fisheries, Chelan County Natural Resource Department, Yakima Nation, American Conservation Institute) to carry out various ecological effectiveness monitoring projects in the North Central Washington CFLRP project area.
- Developed contract with local photographer (John Marshall) to retake series of photos from 1994 Rat Hatchery and Tye Fires, Osborne Panoramas, and recent forest-health treatments.
- Participated in the Washington DNR Forest Health Advisory Committee quarterly monitoring meetings.



Huddling for warmth around a burn pile during a collaborative Level 1 meeting for the Oka-Wen Prescribed Burn Project (Nov, picture from Meg Trebon)

## Support to Planning

- Surveyed whitebark pine habitat, blister rust extent, and cone-bearing trees in the Upper Methow Restoration project planning area with the Methow Valley RD botany program. (OWNF)
- Completed two landscape evaluations for the Chumstick to LP and Upper Methow project areas to support management planning and implementation. Landscapes are assessed for a variety of metrics such as forest structure, cover, crown fire, wildlife habitat, and insect hazard and are incorporated into the purpose and need in NEPA. (OWNF)
- Created potentially old tree layers utilizing the regional old growth standards and available data layers to support planning for the Lower North Shore project. (OWNF)
- Used photo-interpreted data to model changes to fire behavior due to proposed treatments for the Upper Swauk project for use in consultations with USFWS. (OWNF)
- Coordinated with district IDTs on LSR Assessment analysis for the Midnight, Upper Swauk and Chumstick to LP projects. (OWNF)
- Provided science support and feedback regarding public comments on Midnight Restoration EA. (OWNF)
- Participated in IDT for the Okanogan-Wenatchee NF Prescribed Burn EA and developed fire regime and structural departure analysis to inform the proposed action. (OWNF)
- Piloted an aquatic evaluation process for the Upper Methow project. (OWNF)
- Helped complete analysis and draft climate change specialist report for Dollar and Bulldog project EAs. (CNF)
- Drafted Upper Swauk climate change specialist report for draft EA and reviewed contractor drafted

climate change specialist report for the Chumstick to LP project. (CNF)

- Participated as a subject matter expert on NWFP Amendment IDT calls, May – July 2024.

## Partnerships

- US Forest Service Pacific Northwest Research Station.
- US Forest Service Rocky Mountain Research Station.
- University of Washington.
- University of Montana.
- Confederated Tribes of the Colville.
- Washington Department of Natural Resources.
- Washington Conservation Science Institute.
- North Central Washington Forest Health Collaborative.
- Northeastern Washington Forest Collaborative.
- WiRe (Wildfire Research) Center.
- The Wilderness Society.
- Resilient Forestry, LLC.

## Products

[Presentation]: Leung, E. 22 May 2024. CWI Strategic Fuel Breaks Discussion. Presentation to partner organizations.

[Presentation]: Chapman, D. & Kemp, K. 18 July 2024. NEWFC Meeting Presentation on CFLRP Monitoring Efforts.

[Presentation]: Leung, E. 15 Aug. 2024. Using R6 Departure Data for the Oka-Wen's Prescribed Burn EA. Presentation to Central Washington Initiative IDT and federal partners.

[Presentation]; Kemp, K. 31 Jan 2024. Okanogan-Wenatchee Late Successional Reserve Update. Okanogan-Wenatchee Integrated Vegetation Management Winterfest meeting.

[Presentation]: Kemp, K. 14 November 2023. Okanogan-Wenatchee Late Successional Reserve Update. Federal Advisory Committee to the Northwest Forest Plan Amendment Quarterly Meeting.

[Presentation]: Kemp, K. 7 February 2024. Okanogan-Wenatchee Late Successional Reserve Update. North Central Washington Forest Health Collaborative quarterly meeting.

[Presentation]: Kemp, K. & Leung, E. 26 June 2024. Upper Methow Landscape Evaluation & LSR Assessment Consistency. Methow Valley Ranger District IDT.

[Publication]: Kemp, K., Gaines, B., Lyons, A., Begley, J., Topolewski, D., Youkey, D., Woodrow, A., Wier, P., Hall, A., Goodrich, B. & Bail, K. 2024, May. Okanogan-Wenatchee Late Successional Reserve Assessment Update. Wenatchee, WA: US Dept. of Agriculture, Forest Service. 238 p. [https://www.fs.usda.gov/Internet/FSE\\_DOCUMENTS/fseprd1176062.pdf](https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fseprd1176062.pdf)

[Invited Speaker/Panelist]: Kemp, K., Gaines, B., Churchill, D., and Hessburg, P.F. 19 September 2024. DNR Now or Never Video and Panel Discussion. Wenatchee, WA.

[Education/Outreach]: Kemp, K. 8 May 2024. Tree Physiology lesson. Presented to 5th – 8th graders from Waterville Middle School. Lake Wenatchee YMCA Camp, Leavenworth, WA.

Pile burning on the Upper Peshastin Fuels Reduction project area during a field visit with the Level 1 team for the Oka-Wen's Prescribed Fire EA (Nov).



# BLUE MOUNTAINS

Malheur National Forest  
Umatilla National Forest  
Wallowa-Whitman National Forest

Recent themes have revolved around riparian forest thinning, range monitoring, landscape prioritization and Blue Mountain Forest Plan Revision.



**Amarina Wuenschel**  
Area Ecologist



**Cameron Naficy**  
Landscape Ecologist  
(joint FHP)



**Paige Stephens**  
Ecologist



**Karin Hernandez**  
Public Affairs/Ecology  
(Wallowa-Whitman)

Photo: Carly Coffman doing field work (taken by Cameron Naficy).

## Climate Change

- Conducted climate refugia analysis for the National Old Growth Amendment EIS. May inform forest treatment types within and external to climate refugia. Worked with the project team to create nationwide models of baseline, mid-century, and late century climate refugia.
- Served as climate change coordinator for the Wallowa-Whitman NF. Tracked all climate change related projects on the Forest.
- Served as climate change specialists on the Morgan-Nesbit and Sufferin Springs projects. One of the first groups in the nation to implement new national Forest Service direction on climate change and conduct related carbon analyses.
- Wrote a literature review of climate change impacts on Blue Mountain rangelands for the Blue Mountain Forest Plan Revision Team.
- Updating Walter Climate Diagram tool used in project-level silviculture analyses. Compiling 30 global climate model datasets to create an ensemble model. Compiling PRISM data for baseline climate period and updating the model for ArcPro functionality.

## Landscape Assessment

- Developing landscape restoration prioritization for the Wallowa-Whitman NF to be consistent with that of the Umatilla NF.
- Whitebark pine habitat suitability model. Developed a new model using seedling only data for the Pacific Northwest Region.
- NAIP and LiDAR vegetation mapping: production of convolutional neural network time series for the Malheur NF. Developing case study applications around post-fire delayed mortality, insect and disease outbreaks and silviculture.

- Marten habitat modeling. Worked with wildlife biologists to compile and format marten presence/absence data from camera traps. Worked with OSU Lemma Team to create custom standing and downed wood GNN raster datasets. Currently developing model.
- Reviewed a crosswalk between R6 Potential Natural Vegetation spatial dataset and LandFire.

## Technology Transfer

- Old Growth Mortality Malheur NF: Supported research on mature and old growth mortality led by James Johnston, University of Oregon.
- Tri-Forest Prescribed Burning Workshop where scientists and managers discussed scaling up prescribed burning.
- Hosted a day of science talks for interested forest staff on the three Blue Mountain forests in Dayton, Washington.
- Taught three plant association trainings, one on each of the three Blue Mountain National Forests.
- Sampled a rare limber pine population (one of three in Oregon) in the Wallowas to provide genetic samples to the FS National Genetics Laboratory.
- Convened whitebark working group with staff from 3 Blue Mtn forests and externals to discuss important and emerging whitebark issues after the listing and share conservation knowledge.
- Co-organizing a 2025 monitoring symposium for the Northern Blues group with regional non-profit Wallowa Resources and TNC.
- Taught a course on U.S. Rangeland Management to local livestock managers in the Babatii region of Tanzania.
- Wrote guidance for developing a rangeland management plan based on input from local tribal members and managers for the Burunge Wildlife Management Area in partnership with Tuhifadhi Maliasili (TM), and USAID in Tanzania.

- Significantly contributed to Washington State University's post-fire restoration decision support platform to create an accessible toolkit for managers to plan post-fire restoration. Climate Adaptive Management of Post-fire Landscapes in the Blue Mountains.
- Served on two silviculture certification panels. Reviewed stand assessment and other documents and provided written feedback. Assessed oral description of prescription.
- Reviewed the Blue Mtn Forest Partners 'Integrated Forest Restoration Zones of Agreement' and provided feedback.
- Conducted training to become certified tree climbers and instructors. Assisted forests with ponderosa cone collections.
- Attended 'Train the trainer' Multiple Indicator Monitoring training on the Malheur National Forest to support future MIM riparian monitoring trainings.

## Monitoring

- Riparian Forest Thinning Treatment Monitoring, Malheur NF: Conducted post-treatment monitoring of shade after stream-side thinning at East Fork of Big Creek. Analyzed riparian hardwood and vegetation composition and cover data. Conducted field review of project with two riparian experts and synthesized feedback.
- Meadow Restoration Monitoring, Umatilla NF: Drafted baseline reporting for monitoring conducted to assess whether Kelly Prairie wet meadow restoration treatments improve hydrological connectivity of the Kelly Prairie wet meadows.
- Whitebark monitoring, Wallowa-Whitman NF: Developed protocols and established plots to monitor thinning and prescribed burning treatment effects on low-elevation populations of whitebark pine at Sheep Creek with plans to extend to other project areas.



- Northern Blues CFLRP Monitoring Team, Wallowa-Whitman and Umatilla NFs: Served as USFS Monitoring Coordinator and team members. Drafted the Northern Blues Monitoring Plan.
- Tiger Mill Project, Umatilla NF: Conducted monitoring to evaluate treatment effectiveness in returning the Mill Creek Watershed Proposed Research Natural Area and Walla Walla municipal watershed to its historic range of variability (HRV). Scouted red alder populations in the project area. Worked with Umatilla Staff to have Mill Creek watershed included in a NASW hydrological modeling study.
- Asotin Creek Prescribed Fire Project, Umatilla NF: conducted field monitoring of post-fire effects (from the 2021 Lick Creek Fire) and invasive plant spread in Spalding’s catchfly habitat.
- Conducted Northern Blues monitoring to supplement the Northern Blues monitoring team.
- Conducted range monitoring at the Murderer’s Creek group of allotments (and developing a protocol) with Malheur NF and regional staff.
- Serving as team member of Regional Range and Ecology staff to develop an upland range monitoring strategy for R6 and using the Malheur as a pilot.
- Analyzed Proper Functioning Condition monitoring data conducted on stream channels with the Emigrant Ranger District staff in 2023

## Support to Planning

- Morgan-Nesbit Forest Resiliency Project, Wallowa-Whitman National Forest: served as climate change and carbon specialists on team. Assisted with PDC development, co-wrote a climate change and carbon specialist report to inform the EA.
- Riparian shade modeling. Received grant funding along to develop and test a shade model for the Blue Mountain ecoregion.

- Parker’s Mill Categorical Exclusion, Umatilla NF: Co-conducted a review of replanting strategies for curl leaf mountain mahogany and stiff sagebrush to support planning of effective recovery efforts.
- Jane Hazardous Fuel Reduction Project and Dove Vegetation Management Project, Malheur NF: Conducting a review of changes in social license between two similar Forest Service vegetation and fuels management projects, one developed early on after the formation of the Harney Country Forest Restoration Collaborative (HCFRC) in 2010 and the other developed in 2017.
- East Face Vegetation Management Project, Wallowa-Whitman NF: Assisted with post-timber harvest stand exams to evaluate the success of commercial thinning treatments and inform planning of subsequent understory vegetation/fuels removal treatments.
- Sufferin Springs Vegetation Management Project, Wallowa-Whitman NF: Served as climate change team member. Assisted with writing and analysis for the silviculture specialist report for the project EA.
- Attended multiple meetings with the Blue Mtn Forest Plan Revision team to wordsmith plan components
- Red Cougar Riparian Forest Historical Range of Variation. Conducted field work and acquired equipment to evaluate tree fire scars and tree rings to estimate historical fire patterns in riparian forests.

## Partnerships

- Harney County Forest Restoration Collaborative.
- Blue Mountain Forest Partners.
- Northern Blues All Lands Restoration Partnership.
- Oregon State University.
- Washington State University.

- Wallowa Resources.
- USFS National Genetics Laboratory.
- University of Idaho.

## Products

### Formal Products (citation)

- Parks, S. A, C. H. Guiterman, E. Q. Margolis, M. Lonerman, E. Whitman, J. T. Abatzoglou, D. Falk, J. D. Johnston, L. D. Daniels, C. W. Lafon, R. A. Loehman, K. F. Kipfmueller, C. E. Naficy, M. Parisien, J. Portier, M. C. Stambaugh, A. P. Williams, A. P. Wion, L. L. Yocom. 2025. Accepted. “A persistent fire deficit exists across most of North America despite recent increases in area burned.” Nature Communications.
- Margolis, E. Q., A. P. Wion, J. T. Abatzoglou, L. D. Daniels, D. A. Falk, C. H. Guiterman, J. D. Johnston, K. Kipfmueller, M. Krawchuk, C. W. Lafon, R. Loehman, M. Lonergan, C. E. Naficy, M. Parisien, J. Portier, S. A. Parks, M. Stambaugh, E. Whitman, A. Park Williams, L. L. Yocom. Accepted. “The geography of historical fire-climate relationships in North America.” Accepted. Global Ecology and Biogeography.
- Balik, J. A., J. D. Coop, M. A. Krawchuk, C. E. Naficy, M. Parisien, S. A. Parks, C. S. Stevens-Rumann, E. Whitman. “Biogeographic Patterns of Daily Wildfire Spread and Extremes across North America.” 2024. Frontiers in Forests and Global Change 7:1355361.

### Informal Products (no citation)

- Stephens, P., Wuenschel, A. 2024. Study plan silene habitat monitoring within the Asotin Region.
- Tortorelli, C., Wuenschel, A., 2024. Upland Rangeland Condition and Trend for the Blue Mountain Forest Plan Revision. Report to the Blue Mountain Planning Team.
- Wuenschel, A. Tortorelli, C, 2024. Literature Review of Ecosystem Stressors as Relevant to Grazing Lands of the Blue Mountains of Oregon. Report to the Blue Mountain Planning Team.
- Naficy, C. E., 2024. A Review and Synthesis of the Best Available Science on Historical Forest Conditions, Fire Regimes, and Age Structures Across Forest Gradients in the Blue Mountains. Report to the Blue Mountain Planning Team.
- Wuenschel, A., Stephens, P. 2024. Study Plan for Ecological Monitoring of the Mill Creek Watershed within the Umatilla NF Tiger Mill Project Area.
- Naficy, C. E. “Development and applications of a whitebark pine climate and habitat suitability model.” Whitebark Pine Science and Management Conference and Workshops, Whitebark Pine Ecosystem Foundation. Baker City, OR. October 9-11, 2024.

Wuenschel, A.W., Smits-Glen, S. “Monitoring unexpected whitebark within forest restoration projects.” Whitebark Pine Science and Management Conference and Workshops, Whitebark Pine Ecosystem Foundation. Baker City, OR. October 9-11, 2024.

Naficy, C. E. “Historical forest and fire dynamics: considerations for prescribed fire across forest gradients in the Blue Mountains”. Northeast Oregon Tri-Forest Prescribed Fire Workshop. La Grande, OR. May 28-30, 2024.

Stephens, P. Use of Entity Guidelines and PLACE tools to estimate greenhouse gas emissions from timber harvest and fire associated with different proposed action alternatives in the Morgan-Nesbit. 2024.

Wuenschel, A.W. Post-Fire Ecological Restoration: A strategic Framework. Pacific Northwest Ecology Program. July 2024.

Wuenschel, A.W., Beshears C. Monitoring lessons from a riparian forest thinning project. Malheur Monitoring Symposium. May 9th, 2024.

Naficy, C. E. “Status report on whitebark pine climate and habitat suitability modeling”. Forest Health Protection Technical Meeting. Astoria, OR. March 5-7, 2024.

Wuenschel, A.W. Riparian Forest Monitoring after Restoration Treatment. Pacific Northwest Ecology Program Annual Meeting. October 2024.

Naficy, C. E. “Historical fire regimes and landscape dynamics in moist mixed conifer forests: implications for forest insect & disease dynamics and management”. Forest Health Protection Technical Meeting. Astoria, OR. March 5-7, 2024.

Naficy, C. E., L. Platt, K. B. Kemp, P. F. Hessburg, A. Holz. “Origins of complexity in moist mixed conifer forests: implications for forest management”. Eastside Ecology Forum, Eastern Oregon State University. La Grande, OR. February 22, 2024. <https://blogs.oregonstate.edu/eastsideecology/2023-2024-schedule/>

Presented on Northern Blues monitoring plan to steering committee and All Lands groups.

Primary authors of the Northern Blues Monitoring Plan. Survey123 form for automated field entry of range quick plot for the Murderers Creek project on the Malheur NF.

Regional point of contact for the Cooperative Ecosystem Studies Unit (CESU) partnership. Helped develop Master Challenge Cost Share agreement to allow R6 to hire field crews, conduct monitoring and field surveys.

Briefing paper on the ecology grazing exclosures on the Wallowa-Whitman NF.

Paige Stephens and field crew on Tiger Mill.



# CENTRAL OREGON

**Deschutes National Forest**  
**Fremont-Winema National Forest**  
**Ochoco National Forest**  
**Crooked River National Grassland**

The Central Oregon Area Ecology Team specializes in addressing a wide range of eastside forest, upland range, and wetland and riparian ecological management issues. Our current focus is: 1) landscape assessment to support risk prioritization under the Wildfire Crisis Strategy 2) forest landscape vegetation and health assessments, stand analyses, and monitoring 2) drought and livestock grazing interactions, and 3) upland range inventory and monitoring.



**Gregg Riegel**  
Area Ecologist



**Christina McKernan**  
Ecologist



**Bec Braisted**  
Ecologist



**Maximillian Wahlberg**  
Ecologist

Jules Barab and Ben Morse sampling streambed substrate with a gravelometer Yocum Valley, Fremont-Winema.



## Climate Change

- Developed a data driven framework for selecting climate adaptation strategies informed by quantitative climate change vulnerability analysis.
- Co-Production development of a statewide climate analog surface and hosted interpretation and application sessions for area national forests.
- Assisted in the development of a national old growth climate refugia map and associated national climate change vulnerability assessment for terrestrial ecosystems.
- Development and interpretation of: 1) vulnerability informed climate adaptation strategies, and 2) R6 Climate Change Vulnerability Assessment.
- Hosted a series of multi-partner, all lands climate adaptation workshops aimed at developing climate informed management with an emphasis on empirically driven decision making.
- Provided tech transfer sessions for the Regional Climate Change Vulnerability Assessment and Oregon statewide Climate Analog Mapping products.

## Landscape Assessment

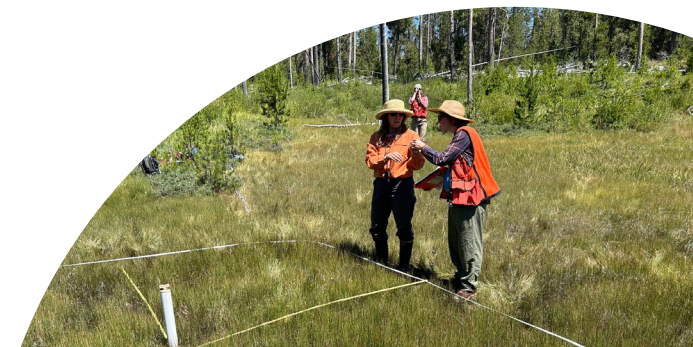
- Development, interpretation and application of the R6 Wildfire Crisis Landscape Prioritization Framework.
- Presented on landscape prioritization under the Wildfire Crisis Strategy to the Deschutes Collaborative Forests Project.
- Hosted WCS Risk and Prioritization workshops for each district in the Central Oregon Focal Landscape.
- Special Habitat Mapping: Completed Special Habitat Map test run on Little Deschutes sub-watershed and developed land cover classes and a process to evaluate training data and field verifications. In collaboration with Doug Glavich of NW Oregon

Ecology Program. Estimated completion of the Deschutes Pilot Summer 2025.

## Technology Transfer

- Presented on novel techniques for quantifying accelerated tree mortality using remote sensing for the Ochoco National Forest.
- Central Oregon TRES Presentation: A Long-Term View of Fuel Treatment Response in Ponderosa Pine/Bitterbrush Forests.
- Presented on the development and best use of old growth mapping products developed at different scales.
- Presentation: Fens in Central OR. Audience Deschutes NF Aquatics, Watershed, and Botany district and forest level.
- Invited Subject Matter Expert: Malheur National Forest, Aquatics and Watershed Cross borders event.
- Cadre member - RX-310 Introduction to Fire Effects: PNW Training Center Virtual Course.
- Cadre member - S-443 Infrared Interpreter for Incident Management Course Steering Committee.
- Region 6 Range Program Managers All Hands Meeting, Presentation- Presented Riparian Monitoring with Ecological Type Scorecard Plots, Pendleton OR.
- Interpreting Indicators of Rangeland Health: Interagency National Team, Cadre Instructor.
- National Rangelands Assessment, Inventory, and Monitoring (RAIMS) National Technical Team.

Testing Fen Monitoring Protocol I-r Cristina McKernan, Skye Greenler, and Clarie Tortorelli. Photo by Gregg Riegel.





Max Wahlberg field presentation COSSA Dry Forest Climate Adaptation Workshop DCFP.

## Monitoring

- Fen monitoring : 1)Antelope Allotment (Fremont-Winema NF): Established monitoring plots at 12 high priority fens, 2)Oregon Spotted Frog (OSF): Established monitoring plots at four 4 fens that support OSF habitat across the Deschutes and Fremont-Winema NF and identified needs for restoration actions, and 3) Deschutes Fen Monitoring: Established monitoring at three high priority fens.
- Multiple indicator Monitoring (MIM): Seven Designated Monitoring Areas (DMA) for livestock grazing effects on riparian conditions for the Fremont-Winema NF, and five sites on the Ochoco NF.
- Assessed 24 long-term ecological status trend sites and measured 10 scorecard plots established with our Riparian Field Guide for the Fremont-Winema National Forest and Lakeview BLM District.
- Whitebark Pine Monitoring – In collaboration with the Central Oregon Forest Health and Protection Service Center, continued monitoring, reporting and interpretation of long-term whitebark pine plots throughout central and southcentral.
- Deschutes Collaborative Forest Project (DCFP) 1) Support to the 10-year post treatment photo point monitoring and interpretation with TNC and COFMS, and 2) Support to the 15-year monitoring report.
- Crooked River National Grasslands Completed the 20-year remeasurement of 12 plots on the Gray

Butte, in the Skull Hollow prescribed burn that was intended to reduce juniper density. Treatment objectives were met; however, the downside is invasive annual grasses have increased up to five times pretreatment cover. This study began as the Beta test as the national FIREMON woodland protocol.

- Alternative Fuels Treatment Administrative Study - Monitored four plots in the 18 Road Burn (2003) on the Deschutes NF for the Cabin Planning Area. This is a long-term study evaluating the effects of salvage logging (2005) on forest regeneration and bitterbrush recovery in mule deer winter range habitat.

## Support to Planning

- Support to Region 6 Forests and Districts on all aspects of wetland and riparian restoration (Proposal Development, Proposed Action, Environmental Analysis, and Implementation).
- Developed project design features (PDFs) to ensure the persistence of healthy fens during implementation of forest management activities.
- Watershed Condition Framework Pilot: evaluated GDEs, wetland, and riparian resource condition for WCF pilot.
- Developed and provided interpretation for regional and forest specific old growth forest maps in support of project planning.
- Supported the National Old Growth Amendment with development of a nationwide climate refugia map to evaluate climate impacts on old growth.
- NWFP amendment: 1) subject matter expert, and 2) support to Large and Old individual tree mapping.
- Support to the Ochoco NF's forest wide Accelerated Tree Mortality planning project.
- Fire risk analysis and interpretation for the Crooked River Grassland's four primary project planning areas.

- Presented to forest wide IDT meetings on best practices and opportunities for incorporating climate change assessments and climate adaptation strategies into project planning and NEPA products.
- Hosted a Tier 2 WCS Landscape Prioritization Workshop for the Central Oregon Landscape focusing on development of project areas that can most mitigate fire risk and enhance ecological integrity.
- Support to Deschutes Forest-Wide Fuels Maintenance Project planning and interagency discussions.

## Partnerships

- Collaborative USFS/USFWS monitoring of Oregon Spotted Frog habitat on the Deschutes and Fremont-Winema NF.
- PSU Institute of Natural Resources - Fen Monitoring and Mapping on the Fremont-Winema NF.
- Colorado State University, Oregon State University – Cascades, USFWS, USGS – Assessing water needs of fens in Central Oregon.
- USFS Northern Research Station: Peatland Mapping on Deschutes NF.
- PNW Research Station – Repeated fire return interval study post-20-year remeasurements, data analysis and manuscript preparation with Becky Kerns, Research Ecologist.
- NRCS Redmond Major Land Resource Area (MLRA) Technical Team. Provide Ecological Site Description (ESD) and Soil Survey assistance and review.
- BLM Lakeview District – Remeasurement of long-term Riparian Ecologic Type Scorecard plots to track ecological status trends.
- Ongoing support the Deschutes Collaborative Forest Project, Central Oregon Shared Stewardship Alliance, and the Ochoco Forest Restoration Collaborative.

## Products

- Multiple Indicator Monitoring reports for six DMAs on the Fremont-Winema NF.
- Ecological condition status reports for four Riparian Ecological Type and Scorecard program ecology plots on the Fremont-Winema NF.
- Draft Fen condition assessment and monitoring protocol in prep, estimated completion FY 2025.
- Smith K.J, T. Hailemariam, F. Mauro-Gutierrez, M.W. Ritchie, G.M. Riegel. Evaluation of Postfire Reforestation Activities on California National Forests (K.J. Smith Master of Forestry, September 27, 2024. Riegel Graduate Committee Courtesy Faculty, College of Forestry, OSU). Manuscript in preparation.

Beckham Braisted measuring line point intercept cover CRNG Gray Butte, Fremont-Winema.



# SOUTHWEST OREGON

## Rogue River-Siskiyou National Forest Umpqua National Forest

2024 priorities for southwest Oregon continued to be guided by leadership on both Forests. We spent much of our time supporting restoration planning efforts. For the Umpqua, ecologists directed a post-wildfire landscape assessment for wildfires from 2020-2023, coordinating fieldwork, GIS analyses, and discussion to comprehensively describe current conditions and management opportunities. Ecologists also continued to lead the Umpqua's long-term planning group, monitor pine health, soil properties, and long-term project effectiveness, and deliver current scientific information to inform planning. Priorities on the Rogue River-Siskiyou included support for forest-wide restoration planning, project planning, implementation, vegetation and fuels monitoring to support the CFLRP project, reporting for the Rogue Basin CFLRP project, and partner collaboration. Writing continues on the general technical report for the regional Potential Natural Vegetation dataset, following publication of the map and user guide in 2023. Southwest Oregon ecologists also supported fire management on the ground from May to October, working in prescribed fire, resource advising, and logistics.



**Bill Kuhn**  
Area Ecologist



**Patricia Hochhalter**  
Ecologist



**Devin McMahon**  
Ecologist



Forest Service photo by Cecilio Ricardo

### Climate Change

- Assisted Southern Oregon Climate Smart partner group to access available data on climate change and adaptation and wrote a draft Douglas-fir forest climate adaptation guide for the Rogue Basin in southwest Oregon.
- Assisted ID Teams and planners on the Rogue River-Siskiyou to include robust climate change impacts into NEPA planning documents.
- Assisted Rogue Forest Partners to establish tree species specific climate adaptive recommendations for restoration objectives in dry forest types.
- Facilitated Interdisciplinary Team identification of climate change adaptation options for the Southwest Tiller Fuelbreaks project.
- Served as unit Climate Change Coordinators, sharing regional and national guidance and tracking unit data.

### Landscape Assessment

- Restoration priorities and analysis for the Snowy Butte planning area on the Rogue River-Siskiyou.
- Rogue Basin CFLRP planning, with collaboration from Southern Oregon Forest Restoration Collaborative and Vibrant Planet. Assisted in the production of Vibrant Planet restoration planning tools for the Rogue Basin.
- Postfire assessment covering approximately 1/3 of the Umpqua.

### Technology Transfer

- Plant Association training for staff.
- Continued development of a geodatabase of available geospatial data relevant to forest restoration needs and prioritization.
- Shared GIS data and analysis to understand project effects to old growth forests.

- Promoted use of newly developed spatial datasets for restoration planning.
- Assisted with several Vibrant Planet training sessions targeted for USFS staff and partner staff.
- Field and dataset orientation for new forest silviculturist.
- Used ecology plot data to develop DBH to tree age regression equations for all conifer trees across all plant associations in southwest Oregon, to be used as a guide to field identify potential old-growth or legacy trees.

Ecologist Devin McMahon and soil scientist Sarah Brame apply maximum force to extract a soil core from the corer. The cores will provide the Umpqua's first detailed data for understanding management effects on postfire soil properties.





Mount Ashland Park on the Rogue River-Siskiyou National Forest, Oregon. (Forest Service photo by Jordan Boyd)

## Monitoring

- Vegetation and fuels monitoring on the Rogue River-Siskiyou to support CFLRP monitoring goals and reporting.
- Assisted Forest Health Protection with Douglas-fir mortality monitoring and field validation of risk rating across southwest Oregon.
- Completed initial post-implementation monitoring of sugar pine health in the Calf-Copeland restoration area.
- Collected and reported information on forest structure and habitat in thinning projects from 10-20 years ago, to inform future thinning.
- With forest soil scientist, wrote successful proposal and collected soil samples from different combinations of soil burn severity and compaction for physical, chemical, and microbial analysis at Pacific Northwest National Laboratory.
- Assisted NW OR ecologists and PNW researchers with long-term high-elevation postfire monitoring.
- Assessed post-wildfire impacts to coastal redwood trees and populations within the northern most extent of the species distribution on the Rogue River-Siskiyou.

## Support to Planning

- Rogue Basin CFLRP (RRS): worked with collaborators and contractors to develop restoration needs and analytical tools for restoration scenario planning for multiple benefits.
- Snowy Butte (RRS): assisted ID Team to identify current conditions, departures, and restoration priorities, and write climate change analysis.
- Further developed a spatial database of historic forest conditions in the Rogue River basin using General Lands Office surveys, interpreting and entering data on bearing trees and forest patterns across six townships covering portions of the Rogue River-Siskiyou.
- Continued to lead Umpqua Resilient Landscapes long-term planning group to identify and prioritize future planning areas forest-wide.
- Coordinated planning with PNW Research Station in the South Umpqua Experimental Forest as part of the Buckeye project.
- Analyzed carbon and climate impacts for the Buckeye and 2021 Danger Tree (yes, planning took that long) projects on the Umpqua.
- Core member of the Midlevel Assessment team defining existing and desired conditions and proposed actions for the North Zone Thin project.
- Strengthened interdisciplinary collaboration through projects with soil scientists, fire planners, botanists, and silviculturists.
- Contributed to NEPA frameworks, especially for climate change impacts.
- Served as primary contacts for NEPA planners seeking information on old growth, vegetation types, whitebark pine, and climate change.



An Oregon Conservation Corps crew helped measure growth and health of sugar pines two years after a restoration project.

## Partnerships

- Klamath-Siskiyou Oak Network Upper Rogue Oak Initiative (OWEB grant).
- Klamath-Siskiyou Oak Network Lower Butte Oak Initiative (OWEB grant).
- Rogue Forest Partners: Rogue Forest Restoration Initiative (OWEB grant).
- Southern Oregon Climate Smart.
- Southern Oregon Forest Restoration Collaborative and Vibrant Planet – CFLRP restoration prioritization and scenario planning support.
- Oregon Conservation Corps and Phoenix School of Roseburg (sugar pine monitoring).
- Great Basin Institute (postfire analysis).
- Pacific Northwest Research Station and Oregon State University (multiple projects and standing discussion group).

## Products

- Updated vegetation and fuels monitoring stratification dataset for the Rogue Basin all-lands monitoring protocol.
- Assisted with production and publication of two Survey123 surveys for vegetation and fuels monitoring.
- Presentations to Forest leadership, interdisciplinary teams, and fire managers on climate change and fire ecology.

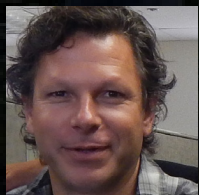
# NORTHWEST OREGON

**Siuslaw National Forest**  
**Mt. Hood National Forest**  
**Willamette National Forest**  
**Columbia River Gorge NSA**

Priorities for the NWO Ecology Group include project work and planning support, particularly climate adaptation integration, fire and vegetation analyses, and Mature and Old Growth (MOG) forest interpretation. Special Habitat modeling and support for mapping across R6 has become one of the focal points of the NWO Ecology Area. Landscape level vegetation analyses, especially in landscapes that have had large fires, has risen to become a major priority as well. Other priorities include meadow restoration support, post-fire vegetation monitoring, and working on the wildfire crisis strategy. Underpinning our priority work is collaboration with Forest staff, Academic and Forest Service Scientists, and external partners.



**Upekala Wijayratne**  
Area Ecologist



**Doug Glavich**  
Area Ecologist



**Audrey MacLennan**  
Area Ecologist

Photo: Audrey and Upekala talk to Hood River Forest Collaborative about Mixed Severity Fire Regimes.



## Climate Change

- Worked with Siuslaw NF Hydrologist to provide a soft rollout of climate change affects to Coast Range vegetation and hydrology from the new in-progress Climate Change Vulnerability Assessment for the area.
- Co-lead field trip with District Wildlife Biologist for National Climate Change Resource Assistants in the Coast Range on Mt. Hebo.
- Co-lead NOGA funded research project with PNWRS to map climate refugia at the CONUS-scale.
- Served as climate change coordinators for the Mt. Hood and Willamette NF's. Worked with District IDTs to incorporate climate change into project purpose and needs, respond to climate change comments and write climate change section of NEPA documents.

## Landscape Assessment

- Involved in landscape analyses to support the Integrated Vegetation Management Strategy for the Willamette NF.
- Involved in interpretation and socialization of the Wildfire Crisis Strategy Prioritization Framework for the Mt Hood NF.

## Technology Transfer

- Provided 2 field plant association trainings: Mt Hood NF (Cascades) and Siuslaw NF (west slope Coast Range). Content included environmental setting influences on stand structure and composition.
- Presented on mixed severity fire regime on a fieldtrip with Wasco County and Hood River forest collaboratives.
- Presented on PNV and defining MOG to Wasco County and Hood River forest collaboratives.



Working with Cristina McKernan, from Deschutes NF, on special habitat-mapping pilot and checking fen wetland soils.

## Monitoring

- Conducted the 3rd vegetation remeasure for the Coast Range meadow create project.
- Initiated project to monitor meadow seed mix efficacy in burn pile burned patches in Oregon Silver-spot Butterfly meadows on the Siuslaw NF Coast: all plants were measured 3 times from April to September.
- In collaboration with the PNW Research Station and OSU Permanent Sample Program, we completed downwood and understory vegetation measurements on all plots in a long-term post fire monitoring study in a High Cascades RNA: Willamette NF Torrey-Charlton RNA Charlton Fire and Cedar Creek reburn.
- Completed 4th data collection across 8 years in a long-term Coast Range Montane Meadow Restoration monitoring project: Marys Peak on the Siuslaw NF.
- In collaboration with other Ecologists, we contributed to data collection for the GLORIA alpine project in the Blue Mountains.

## Support to Planning

- Participated as an extended member of east and west zone IDTs on the Mt. Hood, focused on climate change.
- Extended member to Siuslaw NF Forest-wide invasives EA.
- Extended member to Siuslaw NF North Fork Smith (Climate Change support).
- Engaged with collaborative groups on the Mt. Hood and Willamette NFs.
- Supported the NWFP amendment process as ecology and fire ecology SME's.

## Partnerships

- PNW Station/OSU PSP – Torrey-Charlton RNA long term monitoring.
- PNW Station/OSU - Calloway Climate Smart Forestry study (proposal stage).
- Washington State University – Applied for NASA grant using special habitat modeling for further remote sensing rocky habitats.
- University of Washington & Pacific Northwest Research Station – iLand Project.
- USGS Northwest Climate Adaptation Science Center.
- International Programs/USAID.

Mt. Hebo field trip. Doug Glavich discussing climate change effects to high elevation coast range.



## Products

- Maps –For the R6 Special Habitat mapping project, we used the model in Google Earth Engine to produce 1 new Special Habitat map for the Columbia River Gorge National Scenic Area, which included a new vegetation class (oak); 1 pilot watershed map was produced on the Deschutes NF, testing new vegetation classes including Fen; 1 small map was produced to map oak for a potential stewardship project adjacent to the Siuslaw NF (Glavich).
- Completed DecAID updates.
- Presentation – Oregon Coast Climate Change Vulnerability Assessment Brief: (Glavich). Presented to Coast Range Collaborative and Stewardship groups.
- Manuscript—Co-author with WSU on Classifying Rocky Landcover Using Random Forest Modeling: lessons learned and potential applications in Washington, USA (Glavich).
- Report—Co-production with Siuslaw District Silviculturist—Post-fire vegetation response in Sitka spruce: the first 3 years (Glavich).
- Presentation - Mapping Climate Vegetation Refugia; presented to NOGA Collaborators Group (MacLennan).
- Manuscript – Co-production/author in collaboration with Svetlana Yegorova (PhD candidate, University of Montana) and other Ecologists on Projecting climate driven vegetation shifts in Oregon (Wijayratne).

Upekala Wijayratne and Ben Morse at Peterson Ridge for elk habitat creation monitoring.



# WESTERN WASHINGTON

**Gifford Pinchot National Forest**  
**Mt. Baker-Snoqualmie National Forest**  
**Olympic National Forest**

In FY2024, Western Washington Natural Resource Staff Officers, Ecologists, and the Regional Ecologist agreed that the focus for the Western Washington Ecology Program would continue to be support to planning, collaboration and partnerships, and climate change. Ecologists' work continues to be integral to all levels of project planning and forest management, including three-forest programmatic consultation, the development of broad-scale landscape management strategies and mid-level resource management plans, and support for specific project implementation. Furthermore, Western Washington Ecologists provide consistent and unbiased representation between the Forest Service and state, federal, and non-governmental resource management agencies, research institutions, tribes, collaboratives, and other partners.



**Jessica Hudec**  
Ecologist



**Kevin James**  
Ecologist



**Lisa Schomaker**  
Ecologist

Photo: Lower Skokomish forest.



## Climate Change

- Served as Climate Change Coordinators, participated in regional climate change calls, and shared information on national and regional level direction.
- Incorporated climate change into landscape level planning and project level NEPA as indicated by national and regional direction.
- Used information from vulnerability assessments to strengthen NEPA project proposals and analyses.
- Summarized climate change adaptation in planning and implementation at the unit level for annual Climate Action Tracker reporting.
- Developed summaries and technical guidance for resource specialists as part of updated analysis addendums to the 2011 Olympic Adaptation Partnership and 2014 North Cascades Adaptation Partnership vulnerability assessments.

## Monitoring

- Commenced a pilot effort to resurvey ecology plots established on the Olympic National Forest, with the goal of utilizing over 30 years of data in support of forest management, and to develop a method of digital data collection that will streamline the future monitoring, data management, and analysis process.
- Developed draft proposal to resurvey ecology plots in treated stands and in subalpine zones that may be more susceptible to climate change. Resurveys would take place throughout Western Washington's three National Forest units.
- Supported a multi-agency effort to monitor and adaptively manage mature forests for resiliency and fire risk mitigation. Cascade Forest Conservancy is carrying out the monitoring using methodologies and funding from WA-DNR.

## Support to Planning

- Provided broad-scale ecological information for pre-NEPA project proposals.
- Served as interdisciplinary team leader for a large, ecologically-focused project with multiple partners.
- Contributed ecological context for purpose and need and climate change reports for Environmental Analyses (EAs). Responded to comments as needed.
- Applied regional and national guidance on mature and old-growth forest management to local projects. Contributed to review of projects with management actions proposed in old-growth forest conditions.
- Assisted WA-DNR with implementation of 20-year forest health strategic plan for Eastern Washington by applying outputs from landscape evaluations and dual benefit analyses to project planning in a priority watershed.
- Led field trips to proposed vegetation management planning areas with IDTs, collaborative groups, US-FWS, WA-DNR, tribes, and other partners.
- Collaborated with Engineering, Botany and Unmanned Aerial System staff to develop monitoring plan associated with dam removal project.
- Initiated discussion and process for mapping old growth across Western Washington using Lidar-derived products.



## Partnerships

- Co-led shared stewardship field tour for regional leadership from multiple agencies.
- Worked with researchers on fire refugia, vegetation, and habitat modeling.
- Participated in a multiagency workshop on quantifying climate change vulnerability in Washington's forests.
- Represented the Forest Service on climate change partnership project led by Tulalip Tribe to develop an effectiveness framework for hazard mitigations at the watershed scale.
- Collaborated with WA-DNR on a Western Washington Landscape Evaluation pilot effort to explore methodologies for forest health assessments in priority planning areas. Rolled out results for Greater Packwood/Skate Creek pilot project area.
- Represented the Forest Service on a county-wide forest resiliency plan development.
- Collaborated with National Forest Foundation on the development of aquatic habitat and road interaction strategic plan for the Western Washington Restoration Collaborative Zone.
- Supported Line Officers by working with local tribes and collaborative groups.
- Supported Fire and Aviation Management by offering WFDSS support and through assignments as Resource Advisor, Long Term Fire Analyst, and Fire Effects Monitor.

July field trip.



Tree core from July field trip.

## Products

- Participated in numerous interviews with journalists on ecological topics including climate change, huckleberries, fire history and fire ecology, and forest restoration.
- Participated in an interagency film screening and panel discussion on climate change and old growth: Old-Growth Forests in an Era of Climate Change and Wildfire.
- Co-authored draft Environmental Assessment for Little White Salmon Forest Resiliency and Fire Risk Mitigation Project.
- Developed process for identifying and mapping old growth in the Little White Salmon project area.
- Reviewed portions of Analysis of Threats to Mature and Old-Growth Forests on Lands Managed by the Forest Service and Bureau of Land Management in fulfillment of Executive Order 14072, Section 2.c.ii.



Snag trees.

# LOOKING AHEAD

The Region 6 Ecology Program will continue to apply the best-available science to each of the core services we provide. The program is committed to sustaining core services through the following:

- Support planning throughout the region and locally.
- Intentional science communication.
- Provide analysis, recommendations, and implementation support for new plan direction, including the National Old Growth Amendment and Northwest Forest Plan Amendment.
- Continued collaboration with partners to increase capacity for collaborative monitoring accomplishments.
- Prioritizing climate change and adaptation in new projects.
- Continued CFLRP monitoring, data analysis, and partnership coordination as well as Wildfire Crisis Strategy landscape assessment and outcome tracking.
- Building and improving engagement with indigenous communities, USFS Research Stations, state agencies, partner organizations, and academic institutions.
- Support or conduct post-fire and other vegetation monitoring needs.

Upekala Wijayratne (left in light blue) and Amarina Wuenschel (right in light blue) in Tanzania for the U.S. Forest Service's International Program.

