



NORTHWEST FIRE SCIENCE CONSORTIUM

ACTIVITY IMPACT STATEMENTS

Key fire science topics that NWFSC contributed to this year

The Northwest Fire Science Consortium (NWFSC) contributed to all the listed fire science topics during FY23. New journal articles and reports on each topic that were published throughout the year were added to our research database and highlighted in our monthly newsletter. Topics that were a key focus of a NWFSC-led deliverable (e.g., a research brief, synthesis, webinar, or workshop) during FY23 are noted in bold.

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|-------------------------------|--|--|--|
| 1. Wildlife | 6. Postfire recovery and management | 11. Smoke, air quality, and health | 14. Social science and human dimensions |
| 2. Invasive plant species | 7. Fire behavior | 12. Wildland urban interface and infrastructure | 15. Indigenous knowledge |
| 3. Vegetation | 8. Fire regimes | 13. Firefighter safety and incident management | 16. Economic impacts |
| 4. Soil | 9. Fuels management | | |
| 5. Watershed processes | 10. Prescribed fire | | |

1 EXPANDING TRIBAL CONNECTIONS

Key fire science topics: Indigenous knowledge; Vegetation: Postfire recovery and management; Fuels management; Social science and human dimensions

Societal Impacts: Conceptual, Connectivity, Capacity-building

Multiple studies, assessments, and recent federal guidance have increasingly recognized Indigenous knowledge and fire stewardship, and the need to better bridge diverse knowledges in applying fire science to management. A deficiency of available resources, relationships, and capacities to do this work is often noted as one of the most prominent barriers. In a [recent assessment of the Fire Science Exchange Network \(FSEN\)](#), like most other exchanges, the NWFSC was evaluated as having a gap in addressing Indigenous knowledge. Over the last year, we have actively worked to address these identified needs by carefully building expanded relationships with northwest Tribes while compiling existing science on Indigenous stewardship.

Fire and Fuels Monitoring Workshop for Northwest Tribes

In the spring of 2023, we collaborated with the Northern Rockies Fire Science Exchange Network (NRFSE), the Lake States Fire Science Consortium (LSFSC), the Northwest Region of Bureau of Indian Affairs (BIA-NW), and USDA Forest Service Region 6 to design and host a fire and fuels monitoring workshop for BIA forestry employees. The workshop originated from a need expressed by BIA-NW for entry-level training in fire and fuels monitoring for their forestry personnel. The workshop applied a hybrid approach by: 1) adapting a [digital fire and fuels monitoring curriculum designed by the LSFSC](#) to the NW region, which we conducted live via Zoom, and 2) offering in-person field days to practice and expand on skills in two locations to accommodate participants across the region: Warm Springs Reservation in central Oregon and Spokane Tribal Food Sovereignty Garden in northeast Washington.



Above: Participants during the field days for the BIA Fire and Fuels Monitoring Workshop in May, 2023.

Left: Warm Springs Reservation, OR location. Photo courtesy of Tara Lehrman, BIA GIS Specialist. Right: Participants at Spokane Tribal Food Sovereignty Garden, WA location. Photo courtesy of Monique Wynecoop, BIA Fire Ecologist.

During a group-sharing exercise on the final day, participants expressed a variety of benefits from the workshop, from increased knowledge of and practice with basic monitoring protocols to greater awareness of how established monitoring protocols can be adapted to enhance Tribal objectives such as improved opportunities for traditional food and materials gathering.

Literature synthesis on Indigenous Fire Stewardship (IFS) in the Pacific Northwest (PNW)

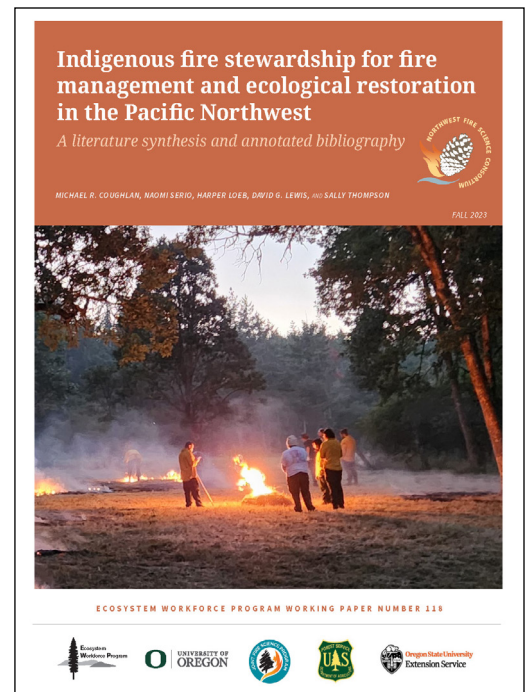
We identified, annotated, and synthesized available peer-reviewed literature and internet resources on IFS in the PNW through a systematic literature review focused on the following questions:

1. What is Indigenous fire stewardship and how has it been represented in peer reviewed literature?
2. What are the salient social issues, debates, and concerns regarding IFS and its application to restoration management?
3. What aspects of IFS has literature in fire ecology and ecological restoration included?
4. What does the literature say about the policy opportunities and challenges of integrating IFS into various fire management contexts across the PNW?

The resulting [synthesis](#) includes an annotated bibliography with 66 articles and a review of the themes present in this body of literature including social, ecological, and policy aspects of IFS. It further summarizes recommendations for land management agencies, policymakers, and researchers to support IFS integration and revitalization.

Inclusive governance

Finally, we have worked over the past year to further integrate Tribal representation and perspectives in our governance structure by holding several meetings to build relationships with the PNW Tribal Relations Specialist and the OSU College of Forestry's Associate Dean for Inclusive Excellence and Director of Tribal Initiatives. As a result, they have committed to our management team and partner sensing



Cover of synthesis on Indigenous Fire Stewardship in the Pacific Northwest.

groups for FY24-25. We have also initiated discussions with the USGS NW Climate Adaptation Science Center, a new management team partner, about how they engage with Tribes and plan to build relationships with their Tribal Liaisons. In FY23, Oregon State University PI and Administrative Director EJ Davis was part of the initial planning committee for the Inter-Tribal Ecosystem Restoration Partnership Peer-to-Peer Learning Summit to be held in November 2023. Going forward, we will continue to focus on establishing relationships and mutual understanding with managers from the Northwest's federally recognized Tribes and rights-holder organizations, as well as with Indigenous scientists, through introductions, site visits, presentations at meetings, and other forms of interaction facilitated by these partnerships, as detailed in our FY24-25 proposal. The successful implementation of the above efforts has led to increased connectivity (increased number and quality of our relationships, networks, and trust) and capacity-building (increased skills, expertise, and resources) around Indigenous knowledge, which will continue to guide our ongoing efforts.

Connecting short- and long-term objectives:

The activities and impacts described above contribute to diverse outcomes across all scales in our logic model. They contribute most prominently to:

- Short-term outcomes #1 and #2 (Enhanced awareness and understanding of new research findings; enhanced decision-making skills and knowledge of options to implement in the field)
- Medium-term outcomes #7 and #8 (Managers are increasingly equipped to address fire-related issues at local and regional levels; Adopt and use new methods or apply improved technology)
- Long-term outcome #14 (Improved landscape resilience to disturbance) and #16 (Cross-boundary partnerships).

As a result of this increased awareness and networks with Indigenous partners, we were able to develop a [new logic model](#) for our FY24-25 proposal and plan of work that includes a new, more targeted long-term socio-environmental outcome: **Mutual inclusion and respect for Indigenous knowledge and rights in research and management efforts** (#18).

2 CROSS-BOUNDARY RESILIENCY

***Key fire science topics:** Postfire recovery and management; fuels management; fire behavior; prescribed fire; social science and human dimensions; wildland-urban interface and infrastructure*

***Societal Impacts:** Conceptual, Connectivity, Capacity-building, Instrumental*

Similar to our work the past few years, we focused a number of our deliverables and outputs in FY23 on supporting cross-boundary and landscape-scale efforts for more resilient landscapes. We centered these activities around the themes of the Cohesive Strategy (resilient landscapes, fire-adapted communities, safe and effective wildfire response) and sought to initiate, sponsor, and help host events addressing progress on each theme.

For example:

- Collaborating with four other western exchanges, we completed a storymap: "[Fire in the Western U.S.](#)" The storymap, along with the accompanying LANDFIRE webinar we led, describes the "western fire problem" as both a shared set of issues across regions as well as the product of regional and, at times, local conditions. The storymap has received over 3,000 views since its release in March 2023.

- We co-hosted a webinar presenting four studies on the effectiveness of fuel treatments at the landscape scale in April 2023. The NWFSC created the flyer for the webinar (see right) and co-led the planning and facilitation of the webinar, which had 315 attendees and has garnered over 400 views of the [recording](#) thus far.
- We sponsored events with numerous partners working at a variety of scales across the west, including:
 - [5th Annual Cohesive Strategy Workshop](#) (11/2022);
 - [Oregon Post-Fire Research and Monitoring Symposium](#) (2/2023). We are working with a USFS PNW Research station videographer to add the videos from this symposium as a resource tab to our website;
 - [Cross-Boundary Landscape Restoration Workshop](#) (4/2023);
 - [2023 Oregon Society of American Foresters Annual Meeting](#) (6/2023).

At each of these events we hosted exhibitor tables to share recent publications, networked with new partners, and grew our overall audience with new subscribers to our listserv (Connectivity impact).

In addition to sponsoring and networking at new events, we also broadened our efforts with key partners regarding our long-term objective of cross-boundary use of prescribed fire (Objective #12). We were invited to participate in a focus group with the WA Department of Natural Resources on communication and outreach barriers to prescribed fire across the state. This broader effort resulted in the 2023 Washington Prescribed Fire Barriers Assessment Report and Strategic Action Plan. We also attended quarterly steering meetings for the WA and OR prescribed fire councils and participated in both councils' in-person meetings (2 days each) where we prepared presentations and led breakout groups. We have also started a new section in the OR Prescribed Fire Council's newsletter on emerging prescribed fire science (Instrumental impact).

Connecting short- and long-term objectives:

The activities and impacts described above contribute to short-term objectives of enhancing awareness and understanding of new research findings (#1), increasing awareness of locally-relevant methods to prioritize management activities and determine the most effective treatments (#2), and increasing awareness of the NWFSC (#4). Medium-term, we see that these efforts are resulting in increased communication and collaboration between practitioners and scientists (#5), and increased requests for NWFSC assistance and expertise (#10) around wildland fire science. Supporting managers in implementing landscape-scale efforts also can directly contribute to long-term outcomes such as acceptance of cross-boundary use of prescribed fire when appropriate (#12) and cross-boundary partnerships (#16).

Although our long-term objectives remain similar, the needs and feedback from partners during these efforts led to more precise and expansive wording of these objectives in our [FY24-25 proposal's new logic model](#). For example, the long-term objective of "Cross-boundary partnerships" is now **"Increase in cross-boundary, science-informed management and partnerships."** These efforts also helped identify a new long-term guiding objective in our new logic model not articulated in the previous model: **"Promote collaboration and co-learning that addresses inequities and sustains and conserves resilient social and ecosystems."** These nuances provide added clarity and structure to the long-term objectives we envision and work towards.



Above: Flyer for the "Effectiveness of landscape fuel treatments" webinar.

Key fire science topics: Fuels management; Prescribed fire; All topics at a core communication effectiveness level

Societal Impacts: Connectivity, Capacity-building

The environment for learning about, accessing, sharing, curating, and communicating wildland fire science has greatly changed in the last decade. The amount of new fire science published each month has increased, as have the number of partners working in the wildland fire space and funding sources across our region. Controversy and misinformation about fire and fuels management also have become more common. Our needs assessments have consistently highlighted the importance of efforts that can summarize, synthesize, and extrapolate new fire science into management implications. Over the last year, planning meetings with both our team and with partners have emphasized the need for new approaches to science engagement that can adapt to emerging issues, reach new players, and explain new efforts and programs. As a result, we are working with managers in new ways to help them communicate, and have also invested in updating our own science communication practices and platforms. Specific examples include:

New approaches: Certified Burn Manager Program fact sheets

Both Washington and Oregon have recently developed statewide Certified Burn Manager (CBM) Programs. These programs provide formal training and certification of individuals in the safe and effective use of prescribed fire within the state, and in certain instances can offer limited civil liability protections. Although there are many similarities between the CBM Programs of each state, there are also key differences. To help explain the objectives, processes, benefits, requirements, and restrictions of each program, we created fact sheets for each at the request of state managers. The [OR CBM Program fact sheet](#) is available and the WA fact sheet will be finalized shortly. The fact sheets can help interested parties access key information about the programs while increasing awareness of the programs more generally in our region.

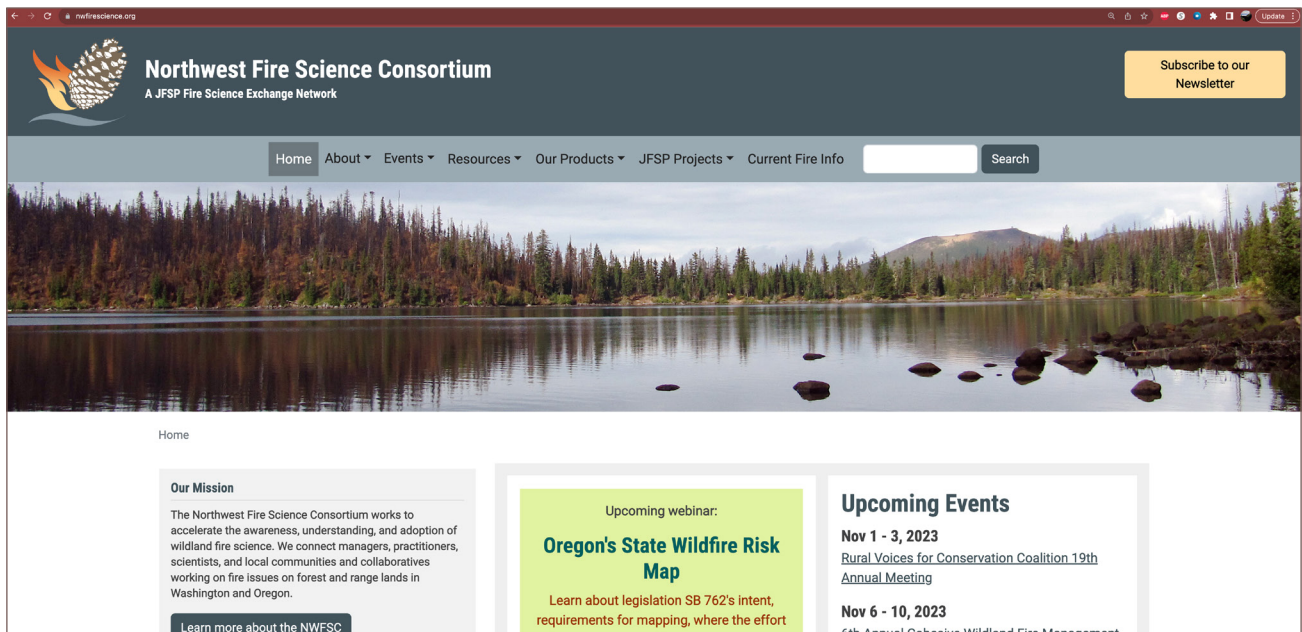
Above: The Oregon Certified Burn Manager Program fact sheet.

Effective foundations: New website and best practices

In addition to offering new ways of presenting information, we sought to ensure that our core approaches and deliverable formats remained effective in an evolving fire science communications environment. We moved our website to a new platform (Drupal 9) and capitalized on the need for back-end updates by also doing a front-end reorganization of site content based on feedback we've received in recent years. Our new website introduced several key changes:

1. A modernized theme with better accessibility across mobile and desktop applications;
2. A central location for NWFSC-developed deliverables, outlined by type;
3. A research database of regionally relevant science with improved search functionality that we update with new resources and publications monthly;
4. An easily accessible form for submitting fire science needs from any source at any time.

Although the new website only recently went live, we have received positive feedback from both regular and new users, as well as information requests from peers on how they might similarly reorganize their sites to improve functionality and accessibility.



Above: Screenshot of the new NWFSC website.

To further adjust our approaches, we also created a series of best practices for common efforts we lead, including webinars, field tours, and written deliverables. These provide guidance on effective, accessible communication methods for our own team and partners.

Connecting short- and long-term objectives:

The statewide CBM Program fact sheets address several short- and medium-term objectives, and will contribute to long-term objectives of improved landscape resilience and reduced negative effects from wildfire by indirectly supporting increased capacity for prescribed fire implementation. Development of a new website and best practices contributes to short- and medium-term objectives of increased awareness of NWFSC (#4) and increased requests for NWFSC assistance and expertise (#12). These efforts do not focus on certain fire science topics but were created to ensure our communication about all topics and all the content we create is effective on a core level. Similarly, while it is difficult to attribute this work to a single long-term objective, these efforts are addressing all our objectives by ensuring that we are effective, adaptive, and relevant in the work we do.