



NORTHWEST FIRE SCIENCE CONSORTIUM

*Annual Report
FY 2019*

Northwest Fire Science Consortium is part of a national network of consortia established by the Joint Fire Science Program to accelerate the awareness, understanding, and adoption of wildland fire science information by federal, tribal, state, local, & private stakeholders in the PNW



JFSP Project Number: 11-S-3-8
Principal Investigator: Becky Kerns
Co-PI/Admin. Director: Janean Creighton
Coordinator: Carrie Berger

During the fiscal year 2019 the priority areas for the Northwest Fire Science Consortium (NWFSC) plan of work were informed through input from our advisory board and a straw poll of our list serve and social media followers.

PRIORITY AREAS

- 1) Smoke in Washington and Oregon: air quality and cross-boundary issues with prescribed fire
- 2) Post-fire management and restoration
- 3) Landscape level planning: collaborative natural resource management and coupled human and natural ecosystems
- 4) Managing fuels and fuel treatments in a changing climate

AWARENESS

The NWFSC sends out a monthly newsletter, as well as daily tweets and face book postings. We have seen consistent growth in our social media followers and our list serve subscribers over the past 3 years (Figure 1)

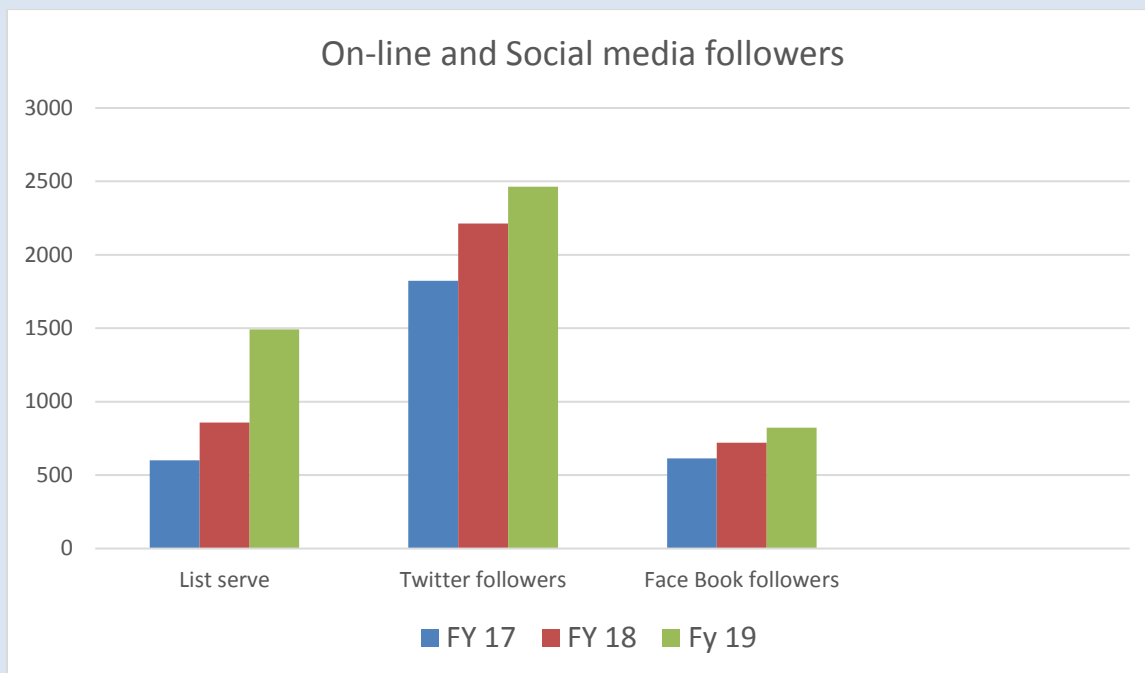


Figure 1

The NWFS has also seen changes in the demographics of participants¹ subscribed to our list serve (Figure 2 & 3):

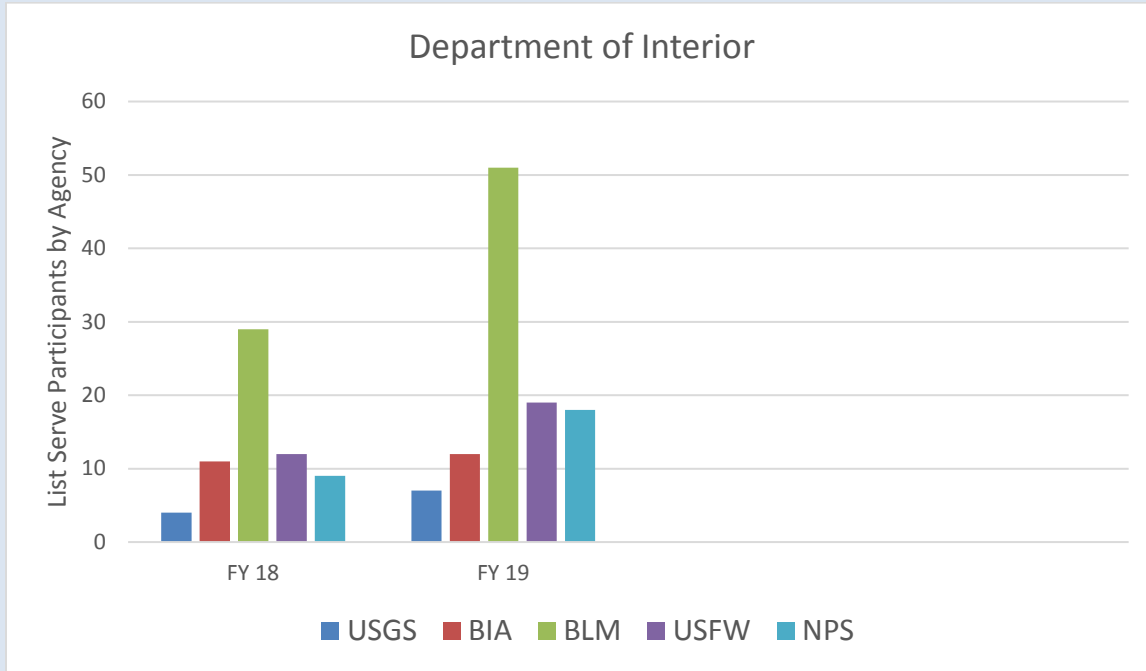


Figure 2

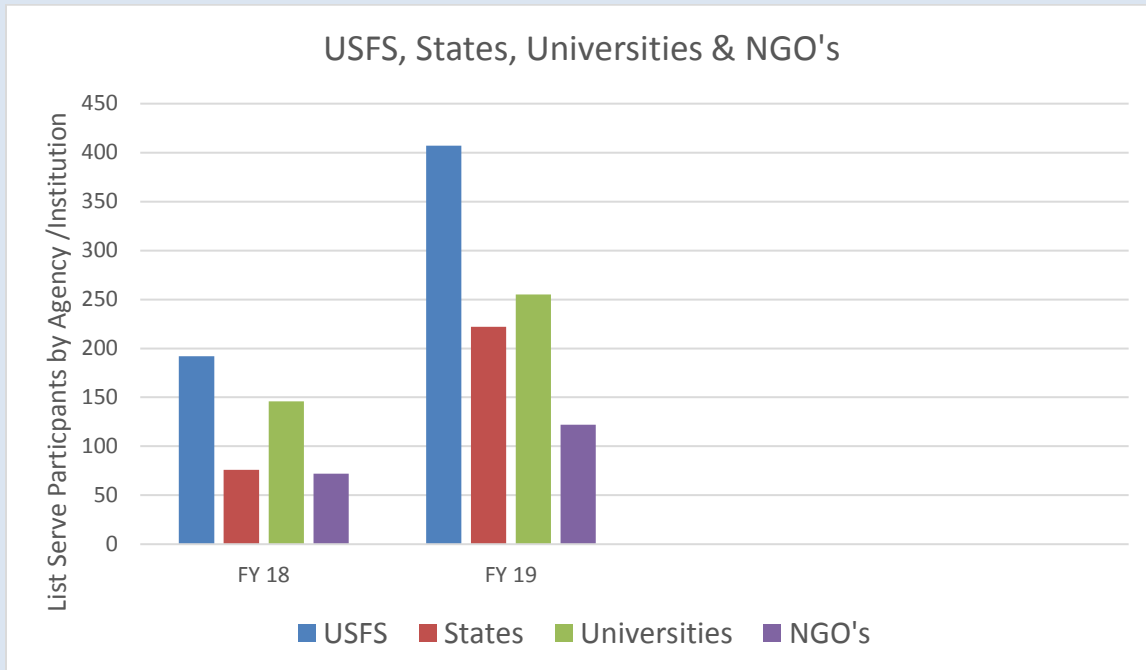


Figure 3

¹ Selected agencies and institutions

The NWFSC engaged in many informal and formal briefings and personal interactions during FY 19, including attendance at the EPA Smoke Management meeting in May 2019, the Oregon Prescribed Fire Council meeting in June 2019 (for which the NWFSC sits on the steering committee), a pub talk in Eugene, OR, guest lecture at University of Oregon, and the lead on a panel discussion of prescribed fire at the Rural Voices for Conservation Coalition (RVCC) annual meeting.

On a more formal level, the NWFSC has been engaged by the State of Oregon to assist in the development of wildfire mitigation and adaptation strategies on a state-wide level. The NWFSC was asked to present on fire science delivery approaches to the Oregon Governor's Wildfire Response Council. In addition, the NWFSC also has a seat on the Wildfire Mitigation Committee, an ad hoc committee to the Wildfire Response Council.

UNDERSTANDING

Webinars

The NWFSC hosted 10 webinars during FY 19, with over 1,000 people participating during the live webinar, and close to 1,500 views later on YouTube. All webinars are available for viewing on our website under the title "[archived webinars](#)", or on the [NWFSC YouTube](#) page. Three of these webinars presented completed JFSP funded research:

- *Growing up: Findings from a JFSP student project on post-fire conifer regeneration trajectories in eastern Oregon* (**Angela Boag, GRIN recipient**)
- *Prescribed fire policy barriers: Findings from a JFSP project on challenges and strategies on federal lands across the West* (**Courtney Schultz & Heidi Huber-Stearns; co-hosted with Southern Rockies Fire Science Network**)
- *Evaluation of burn mosaics on subsequent wildfire behavior, severity and fire management strategies* (**Susan Prichard & Paul Hessburg**)

Other webinars included:

- *Oregon Smoke Management Plan update* (**Nick Yonker**)
- *What's new in LANDFIRE* (**Jim Smith & Kori Blankenship**)
- *An outlook for the 2019 fire season in Oregon and Washington* (**Josh Clark**)
- *Overview & applications of the PNW quantitative wildfire risk assessment* (**Rick Stratton**)
- *Engaging fires before they start: Spatial fire planning for the 21st Century* (**Chris Dunn**)
- *Expect the unexpected fire management challenges and opportunities in a changing climate* (**Amanda Rau**)
- *Let's fix the fire problem: here's a solution* (**Daniel Leavell**)

Videos

The NWFSC produced 4 videos in FY 19:

1. *Up and Down: The wildfire economy* (published September 2019 - 128 views²)
2. *Wildfire in the News* (published September 2019 - 76 views)
3. *Fish and Fire: habitat and history in the Northwest* (Published August 2019 - 1.8K views)
4. *Restoration in a fire forest: The benefits of burning* (Published October 2018 - 4.1K views)



Fish & Fire: habitat and history

“This video is helpful in showing the importance of the processes involved in maintaining habitat complexity. We will be interested in seeing how this translates into specific agency action and coordination among the agencies charged with addressing fire “management” and those charged with protecting habitat and processes that allow complexity to develop over time that supports multiple species.”

Research Briefs

The NWFSC Research Briefs are exactly that – brief summaries of peer-reviewed literature that cover a variety of fire-related topics. Think of these Briefs as “CliffsNotes.” On the go managers have appreciated the upfront ‘Key Findings’ and ‘Management Implications.’”

RB #19: [Adjusting the lenses: focus the role of frequent fires in dry forests](#)

RB #20: [Covering wildfires: media emphasis and silence](#)

RB #21: [Understanding climate and human impacts on historical fire regimes in the PNW](#)



² All reported views retrieved on 10/1/2019

What are? MEASURES OF FIRE BEHAVIOR

There are four main parameters used by fire managers to describe fire behavior:

Rate of spread
The rate of spread (ROS) measures the speed at which a fire moves through a fuel. It is the distance traveled by the fire front in a given amount of time. ROS is influenced by fuel type, fuel moisture, fuel arrangement, wind speed, and topography. The rate of spread is typically measured in feet per minute (ft/min) or meters per minute (m/min).

Fire intensity
Fire intensity is an estimate of the rate or amount of heat energy released at a given time and in a given area. It is measured in kilowatts per square meter (kW/m²) or kilowatts per hour per meter (kW/h/m). Fire intensity is influenced by fuel type, fuel moisture, fuel arrangement, wind speed, and topography.

Flame length
The flame length is the vertical distance from the top of the fire to the top of the flame. It is measured in feet or meters. Flame length is influenced by fuel type, fuel moisture, fuel arrangement, wind speed, and topography.

Fire Facts

What are? TYPES OF FIRE

There are three basic types of forest fires: ground, surface, and crown.

Ground fires
Ground fires burn in the soil or in the duff layer. They are typically caused by lightning strikes or human activities. Ground fires are characterized by a slow rate of spread and a long duration.

Surface fires
Surface fires burn on the surface of the forest floor. They are typically caused by lightning strikes or human activities. Surface fires are characterized by a fast rate of spread and a short duration.

Fire Facts

What are? PARTS OF A WILDFIRE

There are many parts of a wildfire and wildland firefighters use specific terminology to describe each part.

Ignition Point
The ignition point is the location where the fire first started. It is the point of origin of the fire.

Parimeter
The perimeter is the entire outside edge or boundary of a fire or burned area.

Head
The head is the fastest moving portion of a fire which is normally burning with the wind and/or up slope. Depending on the fuel and its arrangement, the head typically has the greatest flame length, flame depth, and rate of spread.

Back (also referred to as the Base or Head)
The back is the portion opposite the head and slowest moving part of the fire with the shortest flame lengths.

Fire Facts

What is? WILDFIRE SMOKE

Wildfire smoke is typically a mixture of water vapor, gases, fine particles, and trace minerals from burning fuels like trees and vegetation, other organic components, and sometimes, building materials.

PM₁₀
Particulate matter, also called inhaled particulate matter (PM₁₀), is the term used to describe particles with a diameter of 10 micrometers or less. PM₁₀ is a health concern because it can be inhaled and lodge deep in the respiratory system, causing irritation, asthma, and other respiratory problems.

PM_{2.5}
PM_{2.5} are the smallest particles, with diameters that are generally 2.5 micrometers and smaller.

Fire Facts

Fire Facts

The NWFSC Fire Facts are brief and to the point fact sheets that cover a variety of fire-related topics. These 5x7 Fire Facts are extremely popular. In addition to distributing Fire Facts at our own NWFSC events, others are starting to request the NWFSC Fire Facts for distribution at their events.

1. FF #19: [What are measures of fire behavior?](#)
2. FF #20: [What are types of fire?](#)
3. FF #21: [What are parts of a wildfire?](#)
4. FF #22: [What is wildfire smoke?](#)

LEARNING

In FY19, the NWFSC provided support, both financial and in person hours, to a number of meetings (4), workshops (4), and trainings (1).

- Pub Talk - *Wildfires and Forest Management*, Eugene, OR (70 attendees)
- Guest lecture, U of Oregon: *Communication & wildfire in the west*, Eugene, OR (16 students)
- Oregon Prescribed Fire Council meeting, Lakeview, OR (25 attendees)
- PNW Regional Forest Collaborative Workshop, Hood River, OR (120 attendees)
- Rural Voices for Conservation Coalition (RVCC), Santa Fe, NM (90 attendees)
- RVCC panel discussion on Rx Fire, Santa Fe, NM (35 attendees)
- NEWfire: Assessing the work of wildfire, Wilbur, WA (40 attendees)
- Prepare for Wildfire: Ready, Set, Go! Workshop, Corvallis, OR (50 attendees)

The NWFSC have been working closely with the Department of the Interior Office of Wildland Fire (with Rick Gividen) on developing a **Fire Ecology Module for the Wildland Learning Portal**. The Module was identified and selected by OWF as a valuable pilot project for the newly developed Portal. A total of 48 students from a variety of agencies, organizations, universities, and landowners participated in the pilot testing of the Module.

The Fire Ecology Module is based on content from Oregon State University's Forestry & Natural Resources Extension Program's Fire Science Core Curriculum, which was supported in part by the

NWFSC. Natural resource managers, early-career fire professionals, and others wanting to learn more about fire ecology will benefit from this entry level Fire Ecology Module.

The partnership between NWFSC, Extension and DOI allowed us to grow the Module in innovative ways including the use of videos, recorded interviews, quizzes, discussion boards and much more. This is a great example of DOI/academia collaboration.

NWFSC Continuing Development: PNW Fire Science Needs Assessment

As the activities from 2016 to 2019 were nearing completion and issues of future funding arose, it became apparent that a more strategic approach was needed to increase the effectiveness of fire science delivery and use. Thus, the NWFSC completed its second regional needs assessment, (the first was completed in 2011 as part of the initial JFSP planning grant).

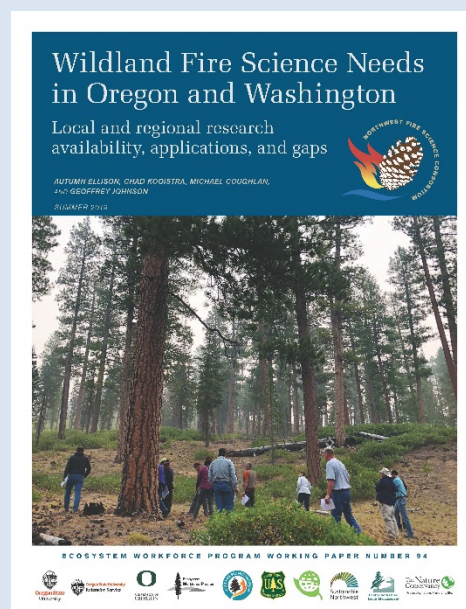
The information from this assessment titled “[Regionally relevant wildland fire research needs in Washington and Oregon: Local and regional research availability, applications, and gaps](#)” was shared widely with our stakeholders and partners. In the FY 19 research effort, initial interviews with stakeholders indicated that site-specific information needs were very much apparent and had perhaps become even more pressing in recent years as the body of wildland fire research expanded, often without addressing management questions for users in their specific areas of work. One key finding indicates that differences in ecological and climatic conditions between regions and social acceptance of non-local research are key barriers for using non-local information. Stated barriers to using non-local research related to differences in fire behavior, ecological conditions, and climatic conditions across different regions or ecosystems. Social considerations such as reaching consensus and aligning findings and decisions with local knowledge were also important challenges to using non-local research.

The needs assessment identified five categories of wildland fire research most needed locally:

- 1) Communication and other social dimensions of wildland fire
- 2) Climate change on different aspects of ecological conditions and wildland fire
- 3) Fuels mitigation and prescribed fire
- 4) Ecological health, resiliency, fire effects, and post-fire restoration
- 5) Wildland fire in riparian areas

Recommendations of assessment:

1. Develop and share case studies of local wildland fire mitigation, management, and research efforts
2. Facilitate and distribute site-specific research on the most needed wildland fire topics
3. Support the production of synthesizing documents on needed topics
4. Consider ways that different types of unpublished data and local knowledge could be made more accessible
5. Continue providing publications and information in a variety of formats



PARTNERSHIPS

Ongoing NWFSC partnerships:

- The Nature Conservancy
- Fire Adapted Communities
- Fire Learning Network
- Oregon State University
- Oregon State University Extension
- Washington State University Extension
- Western Coordinating Committee for Extension
- The Center for Natural Lands Management
- US Forest Service Region 6
- PNW Research Station
- Pacific Wildland Fire Sciences Laboratory
- Sustainable Northwest
- University of Oregon, Ecosystem Workforce Program
- Bureau of Land Management

New partnerships developed:

- National Wildfire Coordinating group
- Western Region Cohesive Strategy group
- Oregon Department of Forestry
- Washington Department of Natural Resources
- Association of Natural Resource Extension Professionals (ANREP)

Developing partnerships:

- Confederated Tribes of the Warm Springs
- Colville Confederated Tribes
- Oregon Governor's Wildfire Response Council

GOVERNANCE

Management Team

During the latter part of FY 19, Morgan Varner resigned his position as PI for the NWFSC after taking a position at Tall Timbers. Becky Kerns, Research Ecologist at the PNW Research Station is the new PI. There are no additional changes to the management team.

Advisory Board

There are two new additions to the advisory board in FY19: Phil Cheng, Oregon Department of Forestry, and Jennifer Watkins, Washington Department of Natural Resources. The NWFSC is still working on filling the vacancies for US Fish and Wildlife and the Bureau of Land Management.

Acknowledgments

-Front page photo: Amy Markus, USFS

-Page 4 photo: Emily Jane Davis, OSU

-Back page photo: public domain courtesy of U.S. Forest Service Pacific Northwest Region Flickr (<https://www.flickr.com/photos/forestservicenw/albums/>)

Report prepared by Janean Creighton, NWFSC Administrative Director, November 2019

