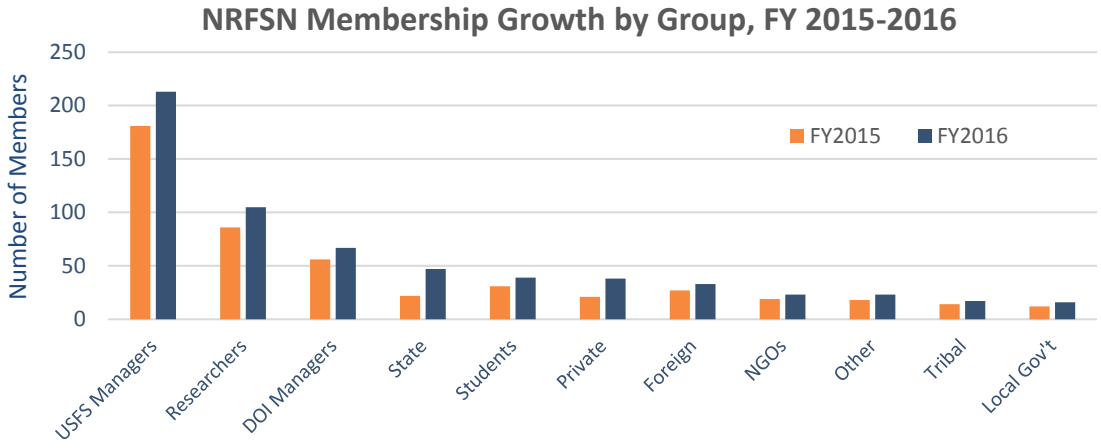
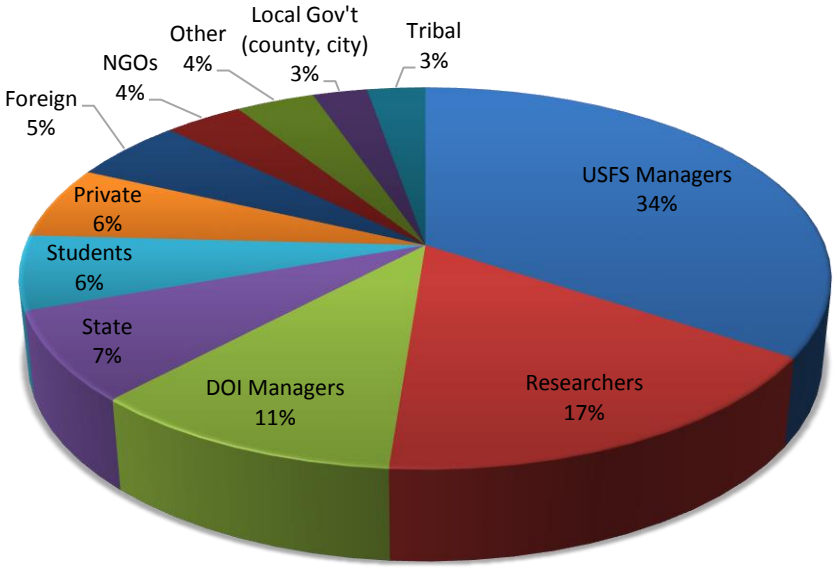
Northern Rockies Fire Science Network (NRFSN) Annual Report for Fiscal Year (FY) 2016

Participation by Organization, FY2016

In FY16, the NRFSN saw 28% growth in membership from FY 2015, bringing current membership to 621 (not counting 22 JFSP Fire Science Exchange Consortia members). While all groups grew, the most notable increases in membership were from state governments (114%) and private entities (81%) (land owners, associations, companies, and consultants). This was largely due to our engagement with the Idaho/Montana Airshed annual meetings, where the NRFSN assessed the perceived need for an Idaho, Montana, and/or Northern Rockies regional prescribed fire council.



The NRFSN has a high proportion of federal, tribal, and state managers (58%) and researchers (17%). This membership reflects the high public and tribal land ownership in the Northern Rockies. Manager membership includes 213 USFS, 47 state, 26 BLM, 25 NPS, 17 tribal, 16 local government, 11 FWS, and 5 BIA managers, predominantly from ID, MT, OR, WA, WY and Canada. Research membership includes 57 University, 45 USFS, and 3 USGS researchers.



2016 NRFSN Membership by Organization

Participation by Activity, FY 2016

In FY16, the NRFSN continued to gain visibility through hosting, co-hosting, and attending in-person events and through personal briefings and consultations. In addition to direct engagement, we continued to produce and facilitate access to online resources, including original written products and videos, engagement through Twitter, and expanding our searchable databases of relevant resources.

Direct Engagement

Workshops and Field Trips. In FY16, we focused most of our time and resources organizing in-person events. Building and leveraging partnerships, we cohosted 4 workshops and 7 field trips, which was many more than planned. In two cases, we combined workshops and fieldtrips into optional multi-day events. The biggest highlights were the wilderness fire and whitebark pine workshops and field trips, the fire bark beetle working group, and hosting the Joint Fire Sciences Program staff and governing board.

In July 2016, we partnered with the Bob Marshall Wilderness Complex managers and the Spotted Bear Ranger District to host the workshop, *Learning from a Legacy of Wilderness Fire in the Bob Marshall Wilderness Complex*, which featured past, current, and future wilderness fire management and science topics related to wilderness fire management. The event included a 3-day backcountry wilderness field trip looking at interactions and effects of multiple fires in the landscape, a half-day front country field trip about managing fire at the wilderness boundary during a period of limited resources, a full-day workshop, and an evening celebration of retired wilderness fire champions. The wilderness fire workshop was attended by 61 people, who were mostly managers. Presentations covered past and current wilderness fire management as well as science related to wilderness fire management (specific topics presented in *Past Event Documentation* section of this report).

In September 2016, we partnered with the Whitebark Pine Ecosystem Foundation, Flathead National Forest, and Glacier National Park to host the workshop, *Whitebark Pine - Successes and Challenges in Managing the Jewel in the Crown of the Continent*. Though we were involved in all of the planning and execution of the event, our largest contribution was in developing the science program of 20 researchers and managers addressing the latest on whitebark pine restoration and management. This event included two field trips: one to Whitefish Mountain Resort to learn about whitebark pine restoration and education at the first Whitebark Pine Friendly ski area in the world; and another to Glacier National Park focused on lessons learned about outplanting 5-needle pines from collected seed.

Another FY16 highlight was the development and hosting of a Fire and Bark Beetle Working Group meeting. The overarching goal of the working group, which included researchers and managers, was clarify perceived disagreements in the scientific literature about fire and bark beetles. With support from the Southern Rockies Fire Science Network, the in-person, two-day meeting occurred in June 2016 in Missoula, MT, after much pre-work, including consultation with our Network of Fire Science Champions to better understand manager information needs related to fire and bark beetles. During the working group meeting, the group identified research needs, outlined a white paper to clarify the differences between bark beetle effects on fire operations, fire-fighter safety, fire behavior, and post-fire recovery and management, and brainstormed several innovative communication tools for conveying information about fire and bark beetles to managers, the public, and policymakers. All members of the working group requested that the group re-convene this fall to continue this collective work.

Also in June 2016, we were honored to host the Joint Fire Science Program Office and Governing Board in Kalispell, MT. As part of this event, we organized a full day on the Flathead Indian Reservation with members of the Confederated Salish and Kootenai Tribes, the Intertribal Timber Council's Fire and Research Subcommittees, and scientists from the Salish Kootenai College and the Missoula Fire Sciences Lab to discuss whitebark pine research as well as how traditional knowledge can inform management.

This was followed by a second field trip that convened scientists and fire managers from the National Park Service and Forest Service to view fire history and post-fire recovery in lodgepole pine ecosystems of Glacier National Park. Discussions included approaches to the management of large wildfires.

In January, we were approached by organizers to co-host the *Future of Fire and Fuels Management: Adapting Fuels Treatments in a Changing Climate* workshop. Partners included the Northwest Climate Science Center, EcoAdapt, Oregon State University Institute for Natural Resources, and the Northwest Fire Science Consortium. It was designed to discuss challenges, novel ideas, plans, and priorities for fuels and fire management under future climate conditions. We secured a location for the event at the 5th International Association of Wildland Fire's (IAWF) Fire Behavior and Fuels Conference, recommended potentially interested and engaging managers and scientists, helped facilitate the workshop, and summarized discussions. This workshop was attended by 36 participants representing 30 organizations.

As in years past, making ourselves available for emerging events, topics, and partnership opportunities and maintaining flexibility with existing partnerships and plans meant shuffling some of our workload. Although we cohosted more workshops and field trips than planned, in several cases the topic focus of these events was different than expected. In FY16, we had also anticipated hosting a fuel treatment methods workshop; a workshop featuring sagebrush, fire, climate change, and Secretarial Order 3336; a Wildland Urban Interface (WUI) and fuels field trip in the Lolo Complex burn; and a fuel treatment lessons learned field trip at the Lubrecht Experimental Forest. Following are updates on these events.

During FY16, we worked with the Southwest Crown Collaborative Forest Landscape Restoration Partnership, the USFS Northern Region, and the National Forest Foundation to plan the fuel treatment workshop, which focuses on applying science to landscape scale fuels projects and will occur in FY17 (December 2016). The dates were selected based on venue and speaker availability.

Following discussions in FY16 with neighboring exchanges about how best to address manager questions about sagebrush and fire outside the Great Basin, we quickly realized that an improved understanding about the various subspecies and their relationships with fire was necessary before hosting a science-dissemination event. Rather, we decided to partner with the Fire Effects Information System to update relevant species and fire regime reviews. In FY16, we provided financial support for updating of the mountain and Wyoming big sagebrush species reviews, which we plan to advertise, distribute, and roll-out in a future cross-exchange event.

With the addition of several workshops and field trips, capacity and time did not permit the WUI and fuels field trip to the Lolo Complex burn. We will still host a WUI and fuels event, though it will likely build on lessons learned during one of the large WUI fire that occurred in our region during Summer 2016 (e.g. Pioneer Fire near Loman, ID and the Roaring Fire in the Bitterroot, MT). The fuel treatment lessons learned field trip at the Lubrecht Experimental Forest was postponed because the Fire Surrogate Study fuel treatments in this area are being re-sampled and analyzed in Fall and Winter 2016; waiting until spring or fall of 2017 will allow for a more complete picture and longer-term results.

***Presentations and Exhibits*.** In FY16, the NRFSN participated in two large conferences, where we used exhibits to present NRFSN background, news, events, and products. These were the 6th International Fire Ecology & Management Congress in San Antonio, TX, and the 5th International Fire Behavior and Fuels Conference in Portland, OR. In addition, NRFSN was the lead on the following two presentations as the San Antonio conference: *Spanning Boundaries in the Northern Rockies: Understanding Audiences as a Critical Piece of the Science Delivery Puzzle* was presented as part of a special session on the JFSP Fire Science Exchanges, and *The Decision to Manage Fire: Insights from Wilderness Fire Managers in the Northern Rockies* summarized lessons learned during our wilderness fire video project and interviews.

NRFSN work and products were also featured as part of an invited webinar with the Great Northern Landscape Conservation Cooperative, titled, *Science delivery - Approaches and Influences on Success*.

Additional NRFSN talks and briefings were given at the National Wildfire Coordinating Group's Fire Behavior Subcommittee meetings (Phoenix, AZ; Missoula, MT), Missoula Fire Sciences Lab (Missoula, MT), Idaho/Montana Airshed Group meetings (Kalispell, MT; Coeur d' Alene, ID), RMRS Human Performance & Innovation and Organizational Learning Research, Development, and Applications (RD&As) (virtual), 15th Annual Foresters Forum (Coeur d' Alene, ID), and the National Burned Area Emergency Rehabilitation (BAER) Team Meeting (Boise, ID).

We continue to use the NRFSN poster display to reach new audiences in the Northern Rockies. In addition to large conference exhibits, we displayed the NRFSN poster at the USFS Northern Region's Regional Leadership Team Meeting (Kalispell, MT Oct 2015) and the aforementioned Whitebark Pine Workshop (Whitefish, MT Sept 2016).

***Webinars*.** Because there are a lot of webinars being offered already, the NRFSN does not host a regular webinar series. Rather, we host webinars on key topics as requested by scientists and managers. In FY16, we hosted webinars on new and updated products being offered from the Fire Effects Information System and describing the LANDFIRE Biophysical Settings review. We also added webinars hosted by others that are relevant in the Northern Rockies to our webinar archive (see online resources section).

Briefings and Consultations. In FY16, we continued to take advantage of opportunities for one-on-one briefings and consultations to increase awareness of the NRFSN, showcase our products and services, and discuss potential future collaboration or partnering. Our field consultations in FY16 included discussions with 17 fire or forest managers and scientists. Additionally, we provided personal briefings to the following leaders: USFS Northern Region - Regional Forester, Deputy Regional Forester, Staff Director Recreation, Minerals, Lands, Heritage, & Wilderness, Regional Fuels Specialist, and Regional Soil Scientist; USFS Intermountain Region - Deputy Forest Supervisor and Regional Fire Specialist; DOI Office of Wildland Fire; Montana Department of Natural Resources – Chief of Fire & Aviation; USFS Innovation & Organizational Learning RD&A – Program Director; Flathead National Forest - Forest Supervisor; Swan District Ranger; Lolo National Forest – Seeley Lake District Ranger; Caribou-Targee National Forest – Ashton-Island Park District Ranger; and Payette National Forest – Council & Weiser District Ranger.

***Requests for Information*.** Each year we are increasingly being contacted by scientists interested in soliciting manager input to research and/or disseminate research results. In FY16, we were asked by 9 researchers to submit 12 Letters of Support for JFSP proposals. Before writing these letters we contacted each researcher to learn more about the proposed project and discuss ways to collaborate in both the input gathering and result sharing phases of the projects. Though time consuming, we found this exercise worthwhile for funded and non-funded projects, because we made new research connections, strengthened existing connections, and described the capacity and support we offer as a conduit to the management community.

Online Resources

In addition to in-person engagement, we expanded online resources available for busy managers looking for information on specific topics.

Past Event Documentation. In FY16, the NRFSN continued to put effort toward capturing and building on our event through webpage development, video recordings, and production of event summaries.

We documented the Wilderness Fire Workshop at Spotted Bear Ranger Station, which includes 7 individual videos and a field trip summary. Although not yet widely advertised, together the videos have been viewed 83 times from our You Tube channel.

These videos captured:

- The history of wilderness fire management by Dave Bunnell, retired USFS National Fire Use Program Manager, and George Weldon, retired USFS Northern Region Deputy Fire Director
- Current fire management experiences across wilderness and non-wilderness boundaries from Mike Munoz, Rocky Mountain District Ranger on the Helena-Lewis and Clark National Forest, and Deb Mucklow, Spotted Bear District Ranger on the Flathead National Forest
- Wilderness fire science presentations by Leopold Institute and University of Montana scientists

In FY16, we also recorded 17 science presentations given at the Whitebark Pine Ecosystem Foundation Science and Management Workshop in Whitefish, MT. These will be edited and released in FY17.

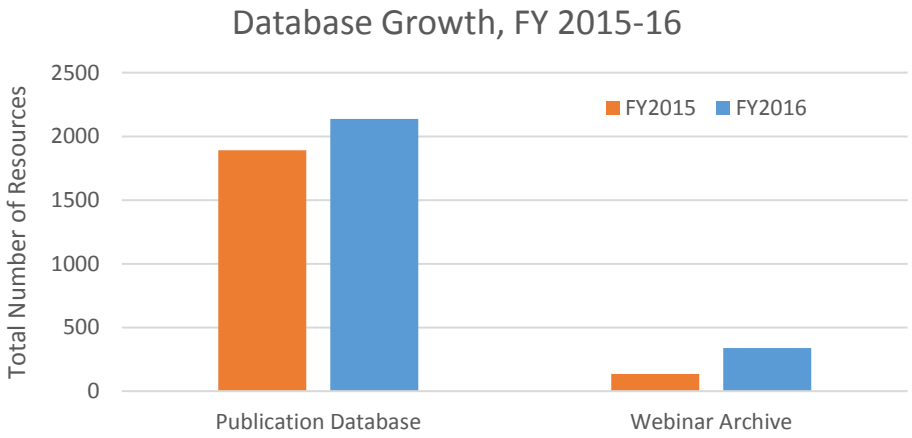
In FY16, we produced three field trip summaries and one workshop summary highlighting key discussion points from our past events:

- FT Summary No. 9: Yellowstone fire history and fire ecology - Insights 27 years after the 1988 fires
- FT Summary No. 10: Suppressing fire at the wilderness boundary - Bear Creek Fires of 2015
- FT Summary No. 11: Conserving whitebark pine in ski areas - Demonstrations at Whitefish Mtn Resort
- Workshop Summary No. 2: Confederated Salish and Kootenai Whitebark Pine Workshop - Science, Management, & Community

In addition to documenting workshop and field trip highlights and lessons learned, these listed summaries, which are available in hard copy and online, provide links to additional resources.

Searchable Databases. Based on the increasing number of available recorded webinars and videos, we continue to add webinar recordings and videos to our searchable Webinar Archive database. In FY16, we added 205 webinar and video recordings to our database. With these additions we now provide access to 339 webinar recordings and videos, which are searchable by fire topic, ecosystem, and date. In FY16, there were 461 page views to our archive according to Google Analytics.

We also expanded the NRFSN Research & Publications database, which now provides access to more than 2,100 searchable and filterable documents. In FY16, we added 246 new documents to the database. This year, the database received 5,907 page views. Whereas in FY15, we reported only for the database homepage, in FY16 we report page views for visits to anywhere within the databases (home pages and internal document pages).



***Briefs and Syntheses*.** This year we produced our first research brief: *Effectiveness and Longevity of Wildland Fire as a Fuel Treatment*, which summarizes four journal articles by Sean Parks, Research Ecologist with the Aldo Leopold Wilderness Research Institute. We are also near completion of our second research brief, in partnership with the Rocky Mountain Research Station, investigating changes in masticated fuels as they age. Our research briefs are a collaborative writing, editing, and layout effort between area researchers and the NRFSN.

In FY16, the NRFSN continued to work on production of several science reviews: we partnered with the Rocky Mountain Research Station and Montana State University to produce, Managing Forests to Protect Municipal Watersheds from the Negative Impacts of Post-Fire Debris Flows; and we partnered with the University of Idaho to produce Quaking Aspen in the Northern Rockies: Considerations for Retention and Restoration. Currently under review, these were researched and written in FY16. They will be finalized and distributed in FY17. Although it's not as far along, we still plan to have the Canopy Fuels review ready in FY17.

***Newsletters*.** As planned, we produced five bimonthly newsletters outside of the spring/summer field and fire season. NRFSN newsletters are resource-focused with short articles about new scientific resources and categorized lists of new and relevant publications, upcoming events, etc.

Social Media. In FY16, we increased our number of Tweets by 514 and number of followers by 485, which keeps our investment equal to that of FY15 and brings our total number of followers to 1,030. We see our increase in content and followers through social media as useful for event advertising, science delivery, and increasing awareness of the NRFSN.

Highlights and Achievements, FY2016

An Established Resource in the Northern Rockies. In our fourth year, the NRFSN continued to increase its reach within the fire research and management communities with increasing engagement from both managers and scientists. However the nature of our engagement is changing. Today, when we attend meetings, workshops, and other events, discussions are less about who we are and what we do and more about specific content, products, and potential for collaboration.

Governance. The NRFSN continues to leverage partnerships in leadership with the USFS Rocky Mountain Research Station – Human Performance, Innovation and Organizational Learning, and Wildland Fire Management RD&As, Fire Sciences Lab, and Northern Region; National Park Service Branch of Wildland Fire; University of Idaho, University of Montana, Montana State University, and Salish Kootenai College. In FY 2016, Faith Ann Heinsch, Physical Scientist with the USFS, RMRS Fire Sciences Laboratory, stepped down from our Project Team. Her liaison role with the Missoula Fire Sciences Lab was filled by Thomas Dzomba, Deputy Program Manager of the Fire, Fuel, and Smoke Science Program at the Fire Sciences Lab. We look forward to letting Thomas's past background in Air Quality and Smoke Management and his current work with the Missoula Fire Sciences Laboratory guide future NRFSN activities and products.

FY16 Highlights. In FY 2016, the NRFSN continued to focus on several priority fire issues in the Northern Rockies, including the effects and significance of repeat fires, fire and bark beetles, whitebark pine restoration, and wilderness fire management. Within these topics, we used a variety of communication methods from development of projects to foster dialogue and disseminate results.

Building on FY15 work on the repeat fires topic, in FY16, we produced our first research brief, Effectiveness and longevity of wildland fire as a fuel treatment, summarizing major findings from 5 scientific articles and reports on the topic, and we hosted the aforementioned wilderness fire workshop and field trips (described in the workshops and field trips section).

The *Learning from a Legacy of Wilderness Fire in the Bob Marshall Wilderness Complex* Workshop and Field Trips was a special event, bringing together past, current, and future wilderness fire champions to share knowledge about challenges and successes. Following the event, one participant emailed to say:

> *"The workshop and field trip at Spotted Bear Ranger Station sponsored by the Northern Rockies Fire Science Network this week was FABULOUS, better than any scientific conference for really sharing knowledge with on-the-ground practitioners.*
>
> *The cadre was an excellent mix of academic and agency researchers and seasoned fire professionals. The early leaders of the wilderness fire program were there to share firsthand the history and their lessons. What a gift of insight and inspiration they provided. Early, mid and late career professionals were there to explain current challenges and how they're overcoming them. Together we discussed future challenges and brainstormed solutions to those challenges.*
>
> *The structure and agenda also worked really well with the two options for field trips, the remote setting, and plenty of time to get to know each other. While I regret that I wasn't able to go on the 2 night backcountry field trip, the half day field trip was excellent and very informative.*
>
> *I came away with new ideas for my own research and a deeper understanding of the science needs of those managers. It seemed to be unanimous that we need to replicate this workshop this again in other locations around the Northern Rockies as well as in the Southwest. I completely agree."* – Participating Scientist

In another highlight, we partnered with the Whitebark Pine Ecosystem Foundation and local managers to host a whitebark pine workshop and associated field trips (described in the workshops and field trips section). Reviewing the latest science and management on the topic, the event was well attended with nearly 160 participants. Some of those who attended shared their thoughts:

> *"I enjoyed the variety of material presented during the science presentation day. It seemed to be very inclusive and accurately described most of the management activities currently being done with whitebark pine throughout the Crown of the Continent and other places. I also really enjoyed the Whitefish Mtn. trip, I thought it was great to see*

practical management activities being performed on the ground and as always it is fun to be where the whitebark pine grow!" – Manager/practitioner

"I've never attended a conference where all of the presentations are condensed into such brief time slots and I think it's much better than having to choose between competing or concurrent sessions. When presenters keep it concise and to the point the audience can stay engaged with the topics and learn even more. Great work!" – Manager/practitioner

Another FY16 highlight included the development of a Fire and Bark Beetle Working Group to facilitate consistent messaging about science and identification of useful products (described in the workshops and field trips section). At the conclusion of the meeting, participants had this to say:

"This meeting will produce a lot of great, user-friendly products, which I am excited about." – District Fire Management Officer

"This meeting fostered what's necessary for a productive meeting: saturation, incubation, and illumination." – Scientist

And last but not least, in June 2016, we were pleased to host the JFSP Program Office and Governing Board, facilitating opportunities for them to interact with area researchers and managers. Field trips provided an opportunity to showcase high-elevation ecosystem research and research needs as well as our relationship and continued work with the Confederated Salish and Kootenai Tribes. JFSP feedback on the field trips was positive:

"Thanks for all your work last week when I was there with the JFSP Governing Board. You did a great job organizing things and leading discussions." – JFSP Governing Board member

"Thanks for fabulous field tours." – JFSP Governing Board member

Art and Science. In FY16, the NRFSN again partnered with area agencies and organizations to bring the *Fire Speaks the Land* educational dance performance to teachers and students grades K-6. The performance teaches about the fire triangle, heat transfer, and the fire ecology and regeneration of whitebark, lodgepole, and ponderosa pines. We partnered with the National Park Service and Idaho Firewise to bring the performance to 1,100 students and teachers in Boise, ID. In addition, we partnered with the Lewis and Clark National Forest and the Montana Wilderness Association to bring the performance to 357 rural and tribal students in Choteau, MT. A third grade teacher in Boise reported:

> *"Wonderful performance! Students were engaged and learning throughout the entire performance. Students were able to recall information learned and talked about it all day! So fun!"*

Transition to FY17. In the coming year, the NRFSN plans to continue building relationships and leveraging partnerships to increase our relevance and ability to serve the Northern Rockies fire management and research community. We plan to expand our topic-based product development, while maintaining flexibility to attend to emerging needs and requests from the field.

We will diversify our reach and relationships by participating in and hosting an exhibit at the first meeting of the newly formed Montana Collaborative Network. This group is expected to function similarly to the Idaho Forest Restoration Partnership (IFRP), which serves more than 15 collaborative working groups throughout Idaho. Because the IFRP provides a venue for cooperation and collaboration among federal, state, tribal, and private entities, it also provides exposure and networking opportunities. We are hopeful for more of the same with a relationship with the Montana Collaborative Network. We will also expand our interdisciplinary reach by hosting an interdisciplinary fuels workshop (see below) and by interacting with the Society of American Foresters.

The NRFSN is happy to report substantial progress on the planning of a landscape-level, interdisciplinary fuels workshop that will take place at the Lubrecht Experimental Forest northeast of Missoula, MT, December 1-2. The workshop will share successes, failures, and lessons learned in scaling stand- to landscape-level planning efforts in multi-jurisdictional, fire-prone, mixed-conifer forests in the Northern Rockies. In addition, we are working with Monica Turner, University of Wisconsin, to host two workshops (Bozeman and Missoula, MT, February 2017) to solicit manger input for a recently funded JFSP study about resilient landscapes with changing climate and fire regimes in the Northern Rockies. We plan on hosting at least one fuel treatment effectiveness field trip with Sharon Hood, Missoula Fire Sciences Lab, on the results of JFSP funded remeasurement studies, and we are excited to have been invited to help plan the next large wildland fire conference in Missoula, MT in 2018.

We will continue disseminating science around key themes that are important for fire and fuels management in the Northern Rockies. In FY17, we will expand our website to include topic-focused web pages, which will feature new and important resources (webinar recordings, videos, scientific articles, reviews, and briefs) that inform specific issues. Featured topics might include: climate change, effects of repeated fires; fire and bark beetles; fire and traditional knowledge; or fuel treatment effectiveness. We will also continue to summarize and disseminate science related to sagebrush, bark beetles, and wilderness fire.

Overall, the NRFSN feels accomplished in FY16 and ready for FY17.