



Fire Science Exchange Network

Fiscal Year 2021
ANNUAL SUMMARY



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The Joint Fire Science Program (JFSP) Fire Science Exchange Network (FSEN) is a national collaboration of 15 regional fire science exchanges that provides the most relevant, current wildland fire science information to federal, state, local, tribal, and private stakeholders within ecologically similar regions. The network brings fire managers, practitioners, and scientists together to address regional fire management needs and challenges.



The FSEN involves active knowledge exchange of fire science information and delivers information to partners via workshops, publications, conferences, webinars, field demonstration tours, and more. Key objectives of the network include: (1) share information and build relationships; (2) list and describe existing research and synthesis information; (3) identify and develop methods to assess the quality and applicability of research; (4) demonstrate research on the ground; (5) support adaptive management; and (6) identify new research, synthesis, and validation needs.

The FSEN celebrated 11 years of national collaboration in fiscal year (FY) 2021. The exchanges continued to demonstrate their excellent ability to adapt to a virtual working environment and deliver science through in-person and virtual events. Activities included hosting webinars; creating various forms of communication materials including StoryMaps, infographics, publications, briefs, videos, and podcasts; and hosting online conferences, virtual field tours, and more. This strong shift demonstrates the organization's ability to be flexible and adaptable. It also demonstrates the ability to reach a wide variety and number of partners that many exchanges would not have been able to serve in person.

FSEN Highlights

In FY 2021, the exchanges focused on implementing activities related to categories of societal impact developed by Meadow and Owen (2021).¹ Societal impacts are “the ways that research, and the process of conducting research, influences the world beyond the academic realm.” The guidebook by Meadow and Owen is intended to offer approaches for planning projects that optimize engagement with societal partners, identify new ways of

impacting the world beyond academia, and develop the skills to assess and communicate to multiple audiences. Categories of societal impact include instrumental, conceptual, capacity building, connectivity, and socio-environmental (Table 1). The following FSEN highlights demonstrate the value and impact of FSEN investments in carrying out on-the-ground science delivery activities.

Table 1. Definitions of categories of societal impact in relation to wildland fire management.

Instrumental	Exchange activities or products were instrumental in changes to plans, decisions, practices, or policies related to wildland fire management.
Conceptual	Exchange activities or products contributed to changes in people’s knowledge about or awareness of an issue related to wildland fire management.
Capacity Building	Exchange activities or products contributed to enhancing the skills, expertise, or resources of an organization or group of people related to wildland fire management.
Connectivity	Exchange activities or products led to new or strengthened relationships, partnerships, or networks related to wildland fire management that endure after the activities or project ends.
Socio-environmental	Exchange activities or products led to changes to social and/or ecological systems (such as improved health and well-being or ecosystem structure and function) related to wildland fire management.

Adapted and modified from Meadow and Owen (2021).¹

¹Meadow, A.M., and G. Owen. 2021. Planning and Evaluating the Societal Impacts of Climate Change Research Projects: A Guidebook for Natural and Physical Scientists Looking to Make a Difference. University of Arizona, Arizona Institutes for Resilience, Tucson, AZ.

ALASKA

ALASKA
FIRE SCIENCE
CONSORTIUM

The Alaska Fire Science Consortium (AFSC) began a new approach to field trips, with two innovations: (1) serving as a value-added resource for field trips that are organized by others, often on short notice, and (2) collecting documentation during those trips that can be used for geospatial products and other interpretive uses. One such example is in partnership with Bureau of Land Management fire ecologist Eric Miller, a member of the AFSC advisory board. The AFSC organized a field crew of faculty and students from the University of Alaska Fairbanks to help install fire effects monitoring transects and collect video and unmanned aerial vehicle imagery on the site of the Yankovich Road Fire scar (located on university land). The AFSC has returned to the site two more times to host tours for artists participating in the “In a Time of Change” program. It is expected that participating in the field trips and reviewing the related geospatial products has increased participants’ knowledge and awareness of wildland fire or fuel treatment impacts at specific locations. The fire effects transects and geospatial products provide useful information resources, and installing the transects has enhanced the skills of university faculty and students. The field trips connected multiple communities, including academic and agency scientists and managers.

The relevant societal impact categories are conceptual, capacity building, and connectivity (Table 1).

Consortium of
Appalachian Fire Managers & Scientists

The Fire Tigers is a student-led fire crew that aids in workforce development at the national level. The U.S. Forest Service district, along with the Consortium of Appalachian Fire Managers and Scientists, sponsors this group by providing instructors from a variety of agencies for a 1-week official university class. The Fire Tigers currently consists of 26 students at Clemson University. Since creation in October 2017, 59 students have participated. This volunteer student fire crew has had the opportunity to help with prescribed fire and wildfire in the Andrew Pickens Ranger District of the Sumter National Forest. The hands-on learning that this program offers during undergraduate natural resource programs at Clemson will translate into each student’s career after graduation.



While the program is less than 5 years old, it has enabled numerous students to prepare fire lines and help with prescribed burns over the past four spring fire seasons. It has gained the attention of *NBC Nightly News* and was a featured segment in October 2018. Currently, three members

of the crew are working seasonal fire jobs with the U.S. Forest Service and the states of South Dakota and Colorado. In addition to teaching the next generation of fire professionals, the desire to increase prescribed fire capacity in a national forest ranger district was one of the driving forces behind the creation of this program. The Fire Tigers program received the Southern Regional Forester Awards in 2021. Read more here - <https://bit.ly/3a0FQUn>



The relevant societal impact category is capacity building (Table 1).

CALIFORNIA



CALIFORNIA FIRE SCIENCE CONSORTIUM

In early August 2021, the Antelope Fire in the Klamath National Forest in northern California burned through two large silvicultural studies within the Goosenest Adaptive Management Area (AMA). Ecological research at the Goosenest AMA was initiated in the mid-1990s and tested different thinning treatments—big tree (emphasizing the retention of large trees), pine

emphasis (favoring pines which were historically more common in a regime of relatively frequent predominantly low to moderate severity fire), pine emphasis thinning followed by two rounds of prescribed fire (in 2001 and 2010), and an untreated control. In 2001, many of the units also became part of the JFSP-funded national Fire and Fire Surrogate Study, and three prescribed fire-only units were added. More than 20 years of data had been collected in all study units when the Antelope Fire occurred. Within 2 weeks of the fire, the California Fire Science Consortium revisited the studies and discovered some key themes. While weather conditions varied considerably while the units burned, many of the untreated control units experienced a stand-replacing crown fire. On the other extreme, units that were thinned and followed up by two prescribed fires fared the best overall, averaging little tree mortality. The thin only and prescribed fire only treatments appeared somewhere in between. Thinning alone caused fire to transition from a crown fire to a surface fire in many locations but often still generated enough heat to cause substantial crown damage.

The consortium worked with the Antelope Fire Public Information Office and the Klamath National Forest to write a press release of preliminary observations with accompanying photographs, which was posted on Facebook. While the resulting ecological benefits were partially achieved through a JFSP-funded project, the consortium's collaborative outreach through social media improved the conceptual understanding for a larger audience. The Facebook post was widely shared, which got the attention of reporters and directly and indirectly resulted in substantial media attention, including news articles in the *Sacramento Bee* and *Los Angeles Times*. In addition, the consortium's previous efforts to assist media by providing more scientifically grounded interviews may have led to a socio-environmental change in the way audiences view both fuel treatments and wildfire.



The relevant societal impact categories are conceptual and socio-environmental (Table 1).

GREAT BASIN

GREAT BASIN
FIRE SCIENCE
EXCHANGE

Along with its agency and institutional partners, the Great Basin Fire Science Exchange developed a six-part “Fuel Breaks in Sagebrush Ecosystems” webinar series in response to Bureau of Land Management plans in 2019 for 11,000 miles of fuel breaks throughout the Great Basin. The series

includes speakers with management and research expertise. It begins with an introduction about what fuel breaks are, why and where they could be implemented, and the purpose they can serve. Subsequent webinars tackle the ecological implications of fuel break installation, maintenance, and connectivity and discuss what is and is not known about the effects and utility of fuel breaks. The series concludes with a panel of research and management voices discussing the current state of fuel breaks in the Great Basin and the challenges related to their management with respect to changes in climate, nonnative species, and agency policies and regulations. The webinar series was instrumental in increasing the knowledge about fuel break systems and awareness of the systems planned in the Great Basin. From comments, survey responses, and post-webinar conversations, this conceptual knowledge exchange brought about greater understanding among partners and paved the way for improved dialogue and outcomes. Access recordings of the fuel breaks webinar series here. <https://bit.ly/3NuS71V>

The relevant societal impact categories are instrumental and conceptual (Table 1).



GREAT PLAINS



The Great Plains Fire Science Exchange commissioned a set of eight legal reviews covering prescribed burning law and prescribed burning lawsuit outcomes for the states included in the exchange area (Colorado, Kansas, Montana, Nebraska, North Dakota, Oklahoma, South Dakota, and Texas; Wyoming already had this type of document). The reviews were initially prepared by law students and then reviewed and edited by Roger McEowen, professor of agricultural law and taxation at Washburn University School of Law. Working with partners at land-grant universities in the exchange area, each state’s legal reviews will be released as an Extension (Cooperative Extension System)

publication. An introduction will introduce the review in a way that is most relevant to that state. Distribution will be through each state’s Extension system, which will provide a higher level of familiarity and acceptance for the legal science presented than with a more generic approach. By providing accurate information on local prescribed burning law and how it is interpreted in court, those considering prescribed burning can more accurately assess the potential risk, which is likely much lower than imagined. A sense of reduced risk may result in more prescribed burning, which will assist in preserving prairie biodiversity and productivity and reducing fuels, especially the woody fuels that are most problematic during wildfires.

The relevant societal impact category is conceptual (Table 1).

LAKE STATES



Prescribed fire in the Lake States region typically has been limited to narrow “traditional” burn windows during the dormant season (spring and fall). While fire history data—including knowledge of Indigenous use of fire—indicate that summer fires were ecologically and culturally important in this region, recent implementation of growing season burns was and is rare. The Lake States Fire Science Consortium has worked diligently to support a cultural shift to “open the burn window” and expand opportunities for prescribed fires. It has provided field trips, facilitated partnerships and exchange of information and data, and supported individuals in developing new burn prescriptions and navigating policy and rare species needs.

The consortium has been instrumental in supporting national forests (Chequamegon-Nicolet, Huron-Manistee, and Superior), state departments of natural resources, The Nature Conservancy, prescribed fire contractors, and others as they progressed from building awareness to successful implementation of growing season burns. Now, the potential and reality of growing season burns as part of a full restoration and management program is gaining significant traction in the Lake States region and other regions of the Northeast U.S.

The relevant societal impact categories are instrumental, conceptual, capacity building, connectivity, and socio-environmental (Table 1).

NORTH ATLANTIC



The North Atlantic Fire Science Exchange hosted the North Atlantic Prescribed Fire Science Workshop in person in September 2021. This entirely outdoor workshop followed COVID safety protocols to get folks together for the first time since lockdowns began in March 2020. This event followed the virtual prescribed burn and modeling workshop that the exchange hosted in 2019. The in-person workshop provided opportunity for more hands-on learning, rather than discussion only.

Field trips stimulated discussion about regional prescribed fire science challenges and solutions. This discussion helped fire scientists and managers to co-produce plans to increase the pace and scale of prescribed burning in the North Atlantic. This included working backwards to identify needs in the region and then lay the groundwork for meeting those needs. Participants left the workshop having generated concrete plans (including leadership and accountability checkpoints) for at least two regional initiatives that took place in spring 2021 (New Jersey Fire Camp and a K-12 prescribed fire initiative). In addition, this workshop launched at least two more long-term projects (for regionwide prescribed fire training and demonstration) that will shape the culture of prescribed fire science in the North Atlantic. Find a summary article about the workshop here - <https://bit.ly/3svUU2M>

The relevant societal impact category is instrumental (Table 1).



NORTHERN ROCKIES



NORTHERN ROCKIES FIRE SCIENCE NETWORK

During the spring of 2021, the Northern Rockies Fire Science Network (NRFSN) began working with the Spokane Tribal Network (STN) to help incorporate traditional knowledge, fire ecology, and cultural burning into the STN food sovereignty garden. Specifically, the shared USFS-NRFSN fire ecologist/tribal liaison partnered with the director of the STN to develop objectives for a spring cultural burn and to help the Spokane Tribe share their traditional knowledge related to fire and food sovereignty. As a result, the NRFSN and STN initiated work on a new video to communicate the value of cultural burning and food sovereignty to scientists, managers, and, most importantly, to the tribal community. Working with a University of Montana Film Studies and Native American Studies graduate student, interviews were filmed in FY 2021, and the video is scheduled to be produced in FY 2022. Find more resources about fire and traditional knowledge here - <https://bit.ly/3PEwnT5>.



The relevant societal impact categories are conceptual, connectivity, and socio-environmental (Table 1).



NORTHWEST



The Northwest Fire Science Consortium developed a podcast series called “The Fire Story,” which aims to provide established and emerging communication professionals and the public with a more nuanced understanding of wildfire’s multiple dimensions through the lens of recent wildland fires in the Northwest. To date, there are five episodes:

■ Episode 0: Introducing the Fire Story 2020

The introduction examines the complexities of wildland fire in the Western United States and the role the media plays in the public’s understanding of the issues. The presenters discuss how research in science communication can improve the connections among researchers, policymakers, and the public.

■ Episode 1: 2020 Fire Season: Media Lessons Learned and What We Need to Know

In this episode, the discussion centers on how information is disseminated before and during a fire event. Where should people go for information, and who should they trust?

■ Episode 2: Living with Smoke/How to Plan and Respond

During the wildfires of 2020, the impacts of the smoke that blanketed the state, as well as the hazards of the COVID-19 pandemic, damaged both health and social systems. This episode examines the effect of smoke on fire management and how the public assesses the risks related to these smoke events.

■ Episode 3: How Did We Get Here? Fire Mitigation Policy and Techniques

This episode explores the importance and complexities around coordination between jurisdictions during a wildfire event. Public safety, economic investment, and ecological concerns compete for resources during a fire, which results in an inflexibility that can be challenging.

■ Episode 4: Fire Response/The Logistical Side

In this episode, suppression experts discuss the impacts of a fire on the economy, ecology, identity, and personal property of a landscape where fire has burned and how the media and communication efforts help to reconnect people to disrupted communities.

■ Episode 5: Rangeland Fires

For wildfires on the rangelands east of the Cascade Mountains, there are different considerations than for fires occurring in more densely populated areas. The ecological, agricultural, and cultural resources of rangelands shape the identity of the American West. This episode examines the role of collaboration in the planning, mitigation, and response to wildfires in rural communities. Access the podcasts here - <https://bit.ly/3wtS2UX>

The relevant societal impact categories are instrumental and connectivity (Table 1).



OAK WOODLANDS AND FORESTS



OAK WOODLANDS & FORESTS FIRE CONSORTIUM

The Oak Woodlands and Forests Fire Consortium hosted an interactive virtual workshop and panel discussion titled

“Reintroducing the Brown-Headed Nuthatch to the Missouri Ozarks” in late FY 2021. This event

was attended by a diverse group of fire managers and researchers from across the Eastern U.S. (25 different organizations from 8 different states represented). The focus of the event was to highlight the long-term, landscape-scale restoration of shortleaf pine-oak woodlands in the Mark Twain National Forest and how this enabled a recent reintroduction of a regionally extirpated, pine-woodland obligate bird, the brown-headed nuthatch. Based on formal and informal feedback, this event changed people’s knowledge about restoration and management of pine-oak woodlands in the region and how it relates to the management of other species of conservation concern. Additionally, and somewhat surprising, was a major tangent the panel discussion took related to the creation and retention of necessary dead pine trees (snags) for this cavity-nesting bird. A discussion ensued in which managers from multiple states indicated that they would be discussing with prescribed fire managers how this may affect ignition patterns and burning prescription on their units to maximize the retention of these snags. It is likely that this will have an impact on how prescribed fire practices are implemented on multiple state and federal lands in the Eastern U.S. Recordings of the virtual workshop presentations can be accessed here - <https://bit.ly/3yGqCyd>. The project highlighted in this workshop was awarded the 2021 Chief’s Honor Award. More here - <https://bit.ly/3FGPBmc>.

The relevant societal impact categories are instrumental and conceptual (Table 1).



PACIFIC



Within the past year, the Pacific Fire Exchange (PFX) continued to serve as a key hub for connecting scientists with land managers as well as the local and national press who have been tuning into the impacts and implications of climate-related natural disasters in Hawaii and other Pacific Islands. One example of the exchange's contributions to stakeholder needs was the development of an effort by the

Palau Protected Areas Network and the Ebill Society (a local conservation nongovernmental organization) to organize and work with local government agencies on a national fire preparedness plan. PFX Steering Committee members with the U.S. Forest Service were key partners in this process and invited principal investigator Clay Trauernicht to present and share PFX products that were relevant to this process. This resulted in a 2-day online planning workshop hosted by the Ebill Society in November 2020 in which PFX materials on pre-fire planning and fire risk mitigation strategies were presented and discussed in terms of their relevance to a national-level fire preparedness. While the workshop questions and responses highlighted the utility of existing PFX products developed for Pacific Island contexts, the application of these resources in a national context also presented potential avenues for new products and audiences, such as community-level volunteer organizing and activities and fire weather warning tools and protocols with government forecasting agencies.

The relevant societal impact category is connectivity (Table 1).

SOUTHERN



SOUTHERN Fire Exchange

In October 2020, the Southern Fire Exchange (SFE) co-hosted the 2020 All Florida Prescribed Fire Council (PFC) Meeting, the first joint virtual meeting of the three Florida PFCs in nearly 2 decades. The SFE provided the expertise, technology, and resources to host the virtual meeting that featured multiple presentations on fire science information, a guest presentation from acclaimed fire historian Stephen Pyne, and critical weather and climate updates for the Florida fire management community. The virtual meeting had more than 650 attendees and 900 registrations. According to the Coalition of Prescribed Fire Councils, the 2020 meeting was the most attended PFC meeting on record. The meeting fulfilled Florida Forest Service requirements for continuing education for Florida certified burners. Helping Florida certified burners meet their training requirements supports the continued use of prescribed fire across the state of Florida and increases the fire science knowledge of the Florida prescribed fire workforce.

In FYs 2020 and 2021, the SFE also provided various levels of virtual meeting support for the Georgia PFC, North Georgia PFC, Central Florida PFC, North Florida PFC, and North Carolina PFC. The SFE now hosts the recordings from several of these meetings on the SFE YouTube channel, where recordings have been viewed by more than 2,000 people. Collectively, the opportunities to use SFE resources, experience, and expertise to support the Southeastern PFCs during the pandemic increases the fire science knowledge of wildland fire managers across the region, builds the capacity of key fire management partners in the region, and supports the broader goals of the National Cohesive Wildland Fire Management Strategy. Access meeting presentations on SFE's YouTube Channel - <https://bit.ly/3yzhBqm>

The relevant societal impact categories are connectivity and capacity building (Table 1).



SOUTHERN ROCKIES



A principal investigator with the Southern Rockies Fire Science Network (SRFSN), Tony Cheng, delivered briefings and webinar presentations, participated in field trips, and provided consultations for both state and federal elected officials and staffers in Colorado. Interactions included providing science and information regarding impacts of climate change in the Southern Rockies region, post-fire recovery and restoration strategic analysis, investing in actionable science to foster climate-resilient ecosystems and communities, and framing the challenge of forest and fire management. The SRFSN was invited to present both at Congressman

Joe Neguse's Wildfire Summit and Senator Michael Bennet's Western Climate Resilience Roundtable. Cheng was also an invited presenter for "Federal, State, and Private Forestlands: Opportunities for Addressing Climate Change" for the Senate Committee on Agriculture, Nutrition, and Forestry. These efforts informed and supported Congressman Neguse's efforts for a Climate Conservation Corps as well as advocating for change in wildland firefighter safety and incentives. Senator Bennet is working with the current administration to create locally based economic solutions for improving forest and watershed health as well as incentives away from fossil fuels.

The relevant societal impact categories are instrumental and socio-environmental (Table 1).

SOUTHWEST



SOUTHWEST FIRE SCIENCE CONSORTIUM

Initiated by the Southwest Climate Adaptation Science Center (SW CASC) and the Southwest Fire Science Consortium (SWFSC) in 2021, the SW Fire Climate Adaptation Partnership (SWFireCAP) now has 10 partner organizations and is open to anyone interested in the intersection of climate change and fire in the Southwest. The partnership is an open and

inclusive group with a shared vision for working together to advance fire and climate adaptation in the Southwestern U.S. The partnership helps fire professionals and climate professionals communicate and leverage resources in the Southwest. The team is working towards formalizing the relationship between the SW CASC and the SWFSC through a memorandum of understanding. Additionally, if the most recently submitted proposal is funded, there is potential to leverage additional funds from the SW CASC to continue work on joint projects.

In the early stages of the partnership, the SWFireCAP developed roundtable teams to (1) work towards expanding knowledge and the practice of cultural burning in the interior Southwest; (2) identify and create case studies of on-the-ground fire and climate adaptation options to facilitate the use and understanding of these practices; (3) catalog current climate and fire trainings to best develop a new training niche of fire and climate interactions that incorporate multiple perspectives; and (4) support authentic partnerships with Indigenous communities throughout the Southwest. Find more information here - <https://bit.ly/3FKDq81>

The relevant societal impact categories are conceptual, capacity building, and connectivity (Table 1).



TALLGRASS PRAIRIE AND OAK SAVANNA



Research specialist Christy Lowney began partnering with the Tallgrass Prairie and Oak Savanna Fire Science Consortium following a discussion about fire effects monitoring at a June 2019 meeting of the Wisconsin Prescribed Fire Council. After receiving a seed grant award for a pilot fire effects monitoring project, Lowney asked practitioners through a survey to identify key burn objectives in oak savanna ecosystems. The resulting monitoring protocol could be used to make pre- and post-burn measurements relevant to three objectives shared by practitioners: (1) Remove leaf litter and ground fuels; (2) Top-kill undesirable woody vegetation; and (3) Kill or reduce invasive species.

Prescribed fires conducted in spring 2021 at the University of Wisconsin-Madison Arboretum and Lakeshore Nature Preserve provided opportunities to test the pre-burn and post-burn sampling protocol in oak savanna. Lowney's field testing of the protocols indicated that several elements could be revised to reduce the time spent sampling and to provide more accurate and relevant data. For example, band transect sampling was replaced with plot-based sampling. Sampling methods were revised based on spring and summer 2021 test sampling.

As a result of this partnership, the UW-Madison Arboretum built additional capacity to monitor fuels, fire behavior, and fire effects and to train land managers in the use of these tools. Learn more about the Midwest Prescribed Fire Monitoring Network here - <https://bit.ly/3wleBN7>



The relevant societal impact category is capacity building (Table 1).

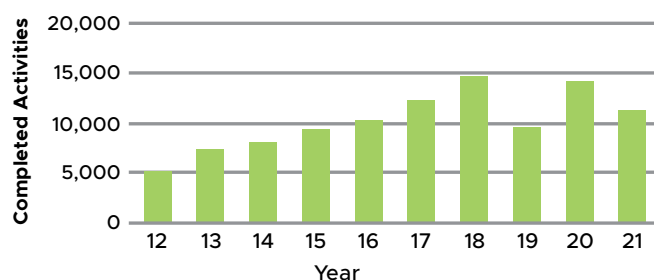
Eleven-Year Summary of FSEN Activities

Annual FSEN activities and participation generally have increased from 2012 to 2021. With a continued shift to virtual work, the number of participants attending FSEN activities saw a significant increase from prior years. This increase in participation came from social media-related activities (e.g., tweets, posts).

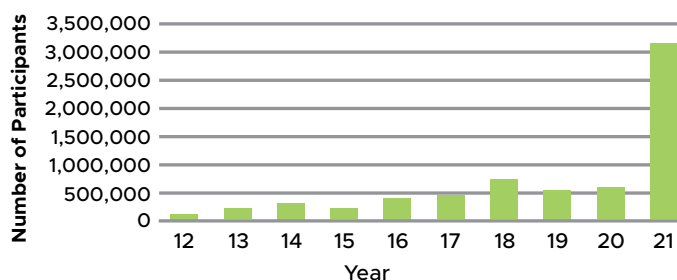
Participation by organizations in the last year increased slightly from the year before. The highest number of participants worked in government agencies, cities, and states (including

counties, local communities, and regional authorities), nongovernmental organizations (including consultants, Fire Learning Network, The Nature Conservancy, companies, private associations, and prescribed fire councils), and universities and colleges. While participation by the various categories remained fairly consistent, the exchanges engagement with cities and local communities more than doubled in the past year. This demonstrates the impact of exchanges at the local level and their ability to interface with a wide number of partners with various needs.

FSEN ACTIVITIES FROM 2012 TO 2021



PARTICIPANTS IN FSEN ACTIVITIES FROM 2012 TO 2021



Appendix

Table A1. Number of 2021 FSEN activities and participants by category.

ACTIVITY CATEGORY	ACTIVITIES	PARTICIPANTS
Academic Credit Courses	24	709
Bibliographies or Annotated Bibliographies	4	1,680
Blog Posts	260	2,935
Conference or Symposia Presentations ¹	55	4,534
Conferences/Workshops	149	20,008
Databases	12	4,406
Encyclopedias	0	0
Facebook Postings	3,507	1,592,160
Fact Sheets and Handouts Produced	89	16,560
Field Consultations and Expert Cadres	156	2,486
Field Trips, Tours, Demonstrations, or Road Shows	31	1,492
Guidelines or Guidebooks	11	23,910
Leadership Briefings	126	1,431
Newsletters Produced	195	98,207
Other Social Media Activities	181	14,399
Podcasts	14	16,564
Poster Presentations ²	5	157
Requests for Information, Assistance, or Referrals	937	11,079
Short Courses and Continuing Education Units	67	7,751
Syntheses	13	153,945
Talks and Personal Briefings about the Exchange	150	4,220
Training Sessions	18	423
Tweets	5,021	1,125,660
Video/Vimeo Productions	257	10,249
Webinars	136	17,138
TOTAL	11,421	3,132,103

¹ Includes participants present for topic-specific discussions and not necessarily entire conferences.

² Includes participants engaged in poster presentations and not necessarily entire conferences.

Table A2. Number of participants by organization in 2021 FSEN activities.

ORGANIZATION CATEGORY	PARTICIPANTS
Agricultural Research Service	23
Bureau of Indian Affairs	150
Bureau of Land Management	504
Bureau of Reclamation	5
Cities and Local Communities	1,019
Companies	948
Consultants	726
Counties/Burroughs/Parishes	677
Department of Defense, including Coast Guard	224
Fire Learning Network and The Nature Conservancy	462
Foreign Organizations and Individuals	536
National Aeronautics and Space Administration (NASA)	35
National Oceanic and Atmospheric Administration and National Weather Service	130
National Park Service	419
Natural Resources Conservation Service	293
Nongovernmental Organizations (includes those not otherwise listed)	1,385
Prescribed Fire Councils	169
Private Associations	182
Private Landowners	1,192
Regional Authorities	181
States	4,028
Tribal Nations	214
University and College Faculty or Researchers	2,209
University and College Students	1,060
U.S. Fire Administration	7
U.S. Fish and Wildlife Service	520
U.S. Forest Service (National Forests, Grasslands, State and Private Forestry)	2,473
U.S. Forest Service Research	549
U.S. Geological Survey	129
TOTAL	20,449



DOI Office of Wildland Fire

