

USDA Forest Service Pacific Southwest Region (R5)

Pacific Fisher Conservation Activities

February 2020

Introduction

The USDA Forest Service, Pacific Southwest Region (Region 5) has been engaged in proactive conservation of the Pacific Fisher for many years. Our robust approach to fisher conservation includes habitat management and conservation, risk reduction, research partnerships, and long-term monitoring. This includes habitat protection and restoration according to existing Land and Resource Management Plan (LRMP) direction, especially the 1994 Amendments to Forest Service and Bureau of Land Management Planning Documents within the Range of the Northern Spotted Owl (Northwest Forest Plan [NWFP]) and the 2004 Sierra Nevada Forest Plan Amendment (SNFPA). It also includes development of conservation resources, including a Conservation Strategy for the Southern Sierra Nevada Fisher population.

Pacific Fisher on National Forest System Lands in the Pacific Southwest Region (R5)

Since the 1990s, The Pacific Fisher has been listed as a Regional Forester's Sensitive Species on the following twelve Region 5 Forests: Eldorado, Inyo, Klamath, Lassen, Mendocino, Plumas, Sequoia, Shasta-Trinity, Sierra, Six Rivers, Stanislaus, and Tahoe National Forests (NFs); it is currently listed as a Species of Special Concern on the Inyo NF. However, of these Forests, only the following nine have confirmed fisher presence: Inyo, Klamath, Lassen, Mendocino, Plumas, Sequoia, Shasta-Trinity, Sierra, and Six Rivers NFs.

Fishers have been reintroduced on private lands in Butte County that are adjacent to the Plumas and Lassen NFs and owned by Sierra Pacific Industries (Stirling Management Tract). Reintroductions began in November 2009, with 40 fishers released by the end of 2011 (24 females and 16 males, CDFW 2018). Reintroduced fishers have been detected on both the Lassen and Plumas NFs. Besides reintroduced fisher, there are two verified historic fisher observations on the Plumas (verified = trapped animal, photo, track, or sighting by reliable observer). Both records are 1940's trapping records, one from the central portion of Plumas NF and the other along the eastside of the Sierra Nevada.

There is no evidence of genetic interchange between fisher in northern California and fisher in the southern Sierra Nevada. There has been no documented evidence of genetic connectivity in either historical or contemporary genetic samples from the Northern California-Southwestern Oregon (NCSO) population and the Southern Sierra Nevada (SNN) population (Knaus et al. 2011, Tucker et al. 2012, K. Pilgrim pers. Comm.). The California Department of Fish and Wildlife's 2015 status review of fisher in California stated that "because fishers occur in California in two geographically separate areas with demonstrated distinct genetic differentiation, the Department treated the two geographic areas as two separate Evolutionarily Significant Units (ESUs); the Northern California ESU and the Southern Sierra

Nevada ESU.” (CDFG 2015, *see Attachment I*). Subsequently, on 3/18/2019, the Department listed just the Southern Sierra ESU as Threatened under the California Endangered Species Act (CESA).

Existing Regulation

The **National Forest Management Act (NFMA)** requires the Forest Service to promulgate regulations to guide development, revision, and amendment of national forest land and resource management plans (forest plans or LRMPs). Planning rules promulgated both in 1982 and 2012 require forest plans “to provide for diversity of plant and animal communities” in accordance with §1604(g)(3)(B) of the NFMA. Importantly, forest plans establish the legal requirements for all projects and activities carried out within the national forests because the NFMA requires that all projects and activities be consistent with the governing forest plan. *See* 16 U.S.C. §1604(i).

The 1982 Planning Rule included the following provision designed to maintain species viability within each national forest (the “planning area”):

Fish and wildlife habitat shall be managed to maintain viable populations of existing native and desired non-native vertebrate species in the planning area. For planning purposes, a viable population shall be regarded as one which has the estimated numbers and distribution of reproductive individuals to insure its continued existence is well distributed in the planning area. In order to insure that viable populations will be maintained, habitat must be provided to support, at least, a minimum number of reproductive individuals and that habitat must be well distributed so that those individuals can interact with others in the planning area (36 C.F.R. 219.19 (1982)).

The 2012 Planning Rule contains species viability provisions as well. The Rule requires forest plans to include plan components¹ to maintain or restore ecological integrity and maintain or restore the diversity of ecosystem and habitat types throughout the plan area (36 CFR 219.9(a)(1) and (2)). The responsible official must determine whether the plan components for ecological integrity and diversity are sufficient to provide the ecological conditions necessary to contribute to the recovery of federally listed threatened and endangered species, conserve proposed and candidate species, and maintain a viable population of each species of conservation concern within the plan area. If the plan components related to ecological integrity and diversity are insufficient to provide such ecological conditions, then additional, species-specific plan components, including standards and guidelines, must be included in the forest plan to provide such ecological conditions in the plan area (36 CFR 219.9(b)(1)).

Pacific Fisher has been designated as a USFS **Sensitive Species** in the Pacific Southwest Region of the USDA Forest Service (R5) for several decades, adhering to policies set forth in Forest Service Manual (FSM) 2600.

FSM 2672.1: Sensitive species must receive special management emphasis to ensure their viability and to preclude trends toward endangerment that would result in the need for Federal listing. An analysis of the significance of adverse effects on the populations, its habitat, and on the viability of the species as a whole. It is essential to establish population viability objectives when making decisions that would significantly reduce sensitive species numbers.

Note that, prior to the 11/7/19 Proposed Rule for Fisher, each forest plan and draft forest plan currently under development under the 2012 Planning Rule identified Pacific fisher as a **Species of Conservation Concern (SCC)** (this includes the revised Inyo forest plan and the revised plans currently being developed for the Sequoia and Sierra National Forests). An SCC is a species, other than federally

¹ Required plan components include desired conditions, objectives, standards, guidelines, and suitability of lands for various multiple uses or activities (36 CFR 219.7(e)(1)).

recognized threatened, endangered, proposed, and candidate species, that is known to occur in the plan area and for which the Regional Forester has determined that the best available scientific information indicates substantial concern about the species' capability to persist over the long-term in the plan area (36 CFR 219.9(c)). Forest plans must contain plan components that provide ecological conditions to maintain a viable population of each species of conservation concern within the plan [national forest] area (36 CFR 219.9 (b)).

For **proposed species**, Forest plans must contain plan components that provide ecological conditions to conserve proposed species within the plan area.

Sierra Nevada Forest Plan Amendment (SNFPA) guidance, which currently applies to the Eldorado, Lassen, Plumas, Sequoia, Sierra, Stanislaus, and Tahoe National Forests (NFs), **includes** desired conditions, management intent, and management objectives to retain suitable habitat, provide for heterogeneous landscapes, and reduce the risk of high severity fire (SNFPA ROD page 47). SNFPA includes standards and guidelines to promote old forest connectivity (S&G 27, 28, 29), retain suitable fisher habitat (S&G 30), protect fisher den sites (S&G 85, 86), and protect key fisher habitat elements like large trees (S&G 90). SNFPA also includes standards and guidelines to conduct fuel reduction activities (S&Gs 1-5) to reduce the threat of high severity fire while retaining large trees and high canopy cover (S&Gs 6, 7). The specific direction language can be found in the 2004 SNFPA Record of Decision: https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5416715.pdf

In addition to adhering to the direction in the SNFPA, Forests have recently been adding additional design criteria to management actions based on the conservation and threat-reduction recommendations described in the Southern Sierra Fisher Conservation Assessment and. For example, the Sierra National Forest has added project design criteria to limit project-related vehicle traffic on USFS roads in fisher denning habitat around dusk and dawn to minimize the chance of vehicle-related mortality in fishers.

The Inyo National Forest recently revised their Forest Plan; the final Record of decision can be found at: https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fseprd673808.pdf; and the Plan can be found at: https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fseprd664404.pdf. Current direction for fisher can be found on pages 42-43 of the Plan.

Northwest Forest Plan (NWFP) guidance, which covers the Klamath, Mendocino, Shasta-Trinity, and Six Rivers National Forests (NFs), as well as portions of the Lassen NF, **includes** a land allocation for Late Successional Reserves (LSRs), comprising 7,430,800 acres, and representing 30% of federal land within the range of the northern spotted owl (Land Allocations, ROD p 6). LSRs, in combination with other allocations and standards and guidelines, maintain a functional, interactive, late-successional and old-growth forest (LSOG) ecosystem for species like the fisher (S&Gs p C-11). While timber harvest is not allowed inside LSRs, thinning and activities to reduce risk of large-scale disturbance are. Management in LSRs can include important activities for fisher conservation, including: thinning to produce large trees, development of multistory stands, killing trees to increase snags and woody debris, reforestation, and prescribed fire. These activities are especially encouraged in stands that are prone to fire, insects, disease, wind, or other disturbance (S&Gs p B-6). On the Region 5 National Forests, treatments to reduce the probability of crown fires are important for managing disturbance risk (S&Gs p B-7). Riparian reserves established by the NWFP also likely provide enhanced habitat conservation for fisher, a species known to prefer the cool microclimates of riparian areas. Management of the 'matrix' forest is also

aimed at providing key habitat elements, like coarse woody debris, to species like fisher (S&Gs p C-40). The specific direction language can be found in the 1994 NWFP Record of Decision: <https://www.fs.fed.us/r6/reo/nwfp/documents/reports/newroda.pdf>

Individual Forest Plans within the NWFP area also contain additional plan components for fisher conservation. For example, S&G 8-31 of the Six Rivers National Forest Plan states: “Maintain habitat characteristics [for Fisher] consistent with their Habitat Capability Model (FEIS, Appendix B Table 7) within 500 feet of known den sites.” (Ch. 4 p. 102).

Monitoring under the Northwest Forest Plan

Regional Monitoring has been on-going within the Northwest Forest Plan (NWFP) footprint since 1994. The goal of the regional monitoring program is to evaluate the effectiveness of the NWFP in achieving its management objectives on federal lands in the planning area. Monitoring focuses on important regional scale questions about older forests, populations and habitat of northern spotted owls and marbled murrelets, watershed health, federal agency relationships with Indian tribes, and socioeconomic conditions in communities closely tied to federal lands. The twenty-year reports were released in 2015, and can be found at: <https://www.fs.fed.us/r6/reo/monitoring/>.

The NWFP Monitoring includes the Late-Successional/Old-Growth (LSOG) Monitoring Program, which conducts long-term monitoring of these forest types to determine the effectiveness of federal forest management on maintaining and restoring LSOG forest ecosystems to desired conditions on federal lands. Main objectives are to:

1. Track status and trend of amount and distribution of older forests in the Northwest Forest Plan area
2. Determine what are the disturbances and stressors causing change in the amount and distribution of older forest classes.

The program uses remote sensed data from satellite imagery and analysis and modeling of forest inventory plot data to track annual status and trends of forest structure and species composition. Remote sensed and plot data of forest conditions provides the information needed for tracking losses and gains in older forest conditions from human and natural disturbances, such as timber harvesting, wildfire, and insect and disease.

The 20-year monitoring for LSOG showed that net changes in amount of older forests on federal lands managed under the NWFP have been small (a 2.8 to 2.9 percent net decrease). This occurred despite gross losses from wildfire (4.2 to 5.4 percent), timber harvest (1.2 to 1.3 percent), and from insects or other causes (0.7 to 0.9 percent), suggesting that processes of forest succession have compensated for some of the losses resulting from disturbance. The NWFP anticipated a continued decline in older forests for the first few decades until the rate of forest succession exceeded the rate of gross losses, but decadal gross losses of about 5 percent per decade as a result of timber harvesting and wildfire were expected. Observed losses from wildfire were about what was expected, but losses from timber harvesting were about one quarter of what was anticipated. Results were consistent with expectations for older forest abundance, diversity, and connectivity outcomes for this period of time. Nothing in the findings suggests that attainment of desired outcomes over the next few decades is not feasible; however, some portions of the NWFP federal landscape were noted to have been set back from those

outcomes, particularly resulting from large wildfires in the fire-prone portions of the NWFP area.

https://www.fs.fed.us/pnw/pubs/pnw_gtr911.pdf

These data indicate relatively stable trends in LSOG habitat, and the most recent monitoring data support this observed stable trend. The twenty-five year monitoring updates are currently in progress and the Forest Service's Bioregional Assessment for the NWFP area, which includes updated monitoring information, will be released this spring.

[It is important to note that, although the monitoring discussion here is focused on LSOG habitat, information from the successful reintroduction of fisher into the Stirling Management Area (on private industrial timberlands), and current population expansion into the Lassen NF, as well as post-wildfire use of the reforested Fountain Fire in less than 20 years, suggest that fisher in the NSCO area are using other habitat types. *(also see Research and Monitoring Section below for information regarding associated monitoring work being conducted on the Lassen NF)*].

Conservation Partnerships and Conservation Strategy

In addition to LRMP direction, USFS Region 5 is actively engaged in the Fisher Interagency Leadership Team, the Fisher Conservation Strategy Core Team, the Fisher Technical Team, and the Southern Sierra Nevada Fisher Working Group.

Together with science and management partners, we have produced a Southern Sierra Nevada Conservation Assessment, and Southern Sierra Nevada Fisher Conservation Strategy, and a follow-up letter from the Strategy authors discussing the changed conditions in the Southern Sierra Nevada (<https://consbio.org/products/projects/southern-sn-fisher-conservation-strategy>), as well as a soon-to-be finalized Southern Sierra Nevada Fisher Conservation Strategy Interim Recommendations document. The USFS contributed \$1 million to this effort between 2013 and 2016. The Conservation Strategy describes current conditions and distribution, fisher habitat conservation and enhancement measures, actions for reducing stressors and mortality factors, and potential for future population intervention. As the drought-induced tree mortality progressed through the Southern Sierra, the Strategy authors released a letter describing aspects of the Strategy recommendations that are still highly applicable under these changed conditions. Most recently, the Southern Sierra Nevada Fisher Conservation Strategy Interim Recommendations document was developed to provide for urgently need for guidance for forest restoration projects to increase resilience and benefit fishers within the SSN Fisher Conservation Area in the Interim, while the SSNFCS is updated based on the new conditions currently on the landscape and using a new, updateable vegetation database. This document will be posted on the consbio.org website in the near future. Information from these documents have been incorporated into the final Forest Plan for the Inyo National Forest and are in the process of being incorporated into final revised Forest Plans for the Sierra and Sequoia National Forests.

With regards to potential small population risk and/or DPS division, the Strategy notes that Fishers have not been detected north of Core 5 in Core 6 or 7 (although comments submitted from Jody Tucker will highlight a recent detection north of the Merced River). The Strategy states: "Because Core 7 is not currently occupied by a breeding fisher population, and it likely will take several decades before natural re-establishment of a population, there is an opportunity for intensive management actions to restore more resilient and higher-value habitat conditions for fishers within a few decades, in anticipation of continued northward expansion of the population" (page 29).

With regards to fire and/or mortality risk to fisher, the Strategy sets targets for resilience (page 44) but recognizes that information on resilience metrics is currently lacking. In response to this, the USFS Region 5, in partnership with the Conservation Biology Institute, has developed a Resilience Working Group to develop resilience metrics and targets, inform management to increase resilience and reduce the risk of fire and/or mortality, and track resilience over time. The USFS Region 5 has contributed \$700,000 to this work so far since 2017 and this work is ongoing.

Efforts to Reduce Disturbance Risk to Fisher Habitat

The reduction of hazardous fuels and management of healthy and resilient forests is a major emphasis for the USFS, and the Region 5 leadership team is committed to reducing large-scale, high severity wildfire risk to Pacific fisher habitat.

In 2011, the leadership in Region 5 established a formal Leadership Intent for Ecological Restoration, which identified an overarching, region-wide goal “to retain and restore ecological resilience of the National Forest lands to achieve sustainable ecosystems that provide a broad range of services to humans and other organisms.” A large focus of this work is to restore the landscape to reduce the catastrophic effects of severe wildfires and climate change to move coniferous forests towards a multi-story heterogeneous landscape. The Leadership Intent established a specific intent to “Increase forest resilience through treatments (including prescribed fire and thinning) and wildfire, resulting in resource benefits to approximately 9 million acres on national forest system lands” in the next 15-20 years. This emphasis benefits many wildlife species, including the FISHER. More information can be found in the Region 5 Ecological Restoration Leadership Intent document:

https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5351674.pdf.

Annually, national forests implement numerous projects designed to meet this need within the range of the fisher, using a variety of management techniques, including prescribed fire, mechanical fuels treatments (e.g., forest thinning and biomass reduction), and managed wildfire to achieve desired outcomes. And the Region is working to increase the pace and scale of these efforts.

Region 5 annually receives appropriated funding for hazardous fuels reductions; this has averaged \$47 million per year since 2004. As national emphasis on fire resilience and safety grows, we expect this funding to increase over time. The Region also uses other appropriated funds to help increase our capacity to accomplish hazardous fuels reduction work, which also improves the condition of forests, watersheds, and wildlife habitat. In addition, the Region has entered into numerous partnerships and efforts to increase the pace and scale at which we accomplish this work.

In 2018, Region 5 completed approximately 313,000 acres of restoration, which included over 63,000 acres of prescribed fire – the largest number recorded since the National Fire Plan was implemented in 2001. In 2019, even with losing more than a month’s work time during the government shutdown, which occurred during the busiest prescribed burning season, Region 5 accomplished 217,000 acres of fuels reduction treatment, with additional accomplishment achieved through management of wildfire and on adjacent lands through partnerships.

Additional fuels reduction and restoration work is accomplished on adjacent private and state lands, through our State and Private Forestry programs and in partnership with state agencies and non-

governmental organizations and companies. Region 5 has been working with a variety of partners to increase the pace and scale of fuels reduction and other work that promotes resilient forests; examples are described below.

Region 5 also conducts monitoring and administrative studies to increase understanding of ecosystem response to fire, fuels treatments, climate change and other disturbances. The USFS monitors the effectiveness of fuels reduction treatments after fires burn through them, as required by Interim Directive 5140-2012-1, and the data are entered into the national Fuels Treatment Effectiveness Monitoring (FTEM) database (<https://fireportal.usda.gov/ftem/>). The objective of this data collection is to document the effectiveness of fuel treatments on wildfire behavior or effects. Analysis of these data confirm the effectiveness of fuels treatments; for example:

https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5287411.pdf;

https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fsbdev3_045471.pdf

In addition, the Region 5 Ecology Program serves multiple critical roles in the Region, including science application to resource management and inventory and monitoring of conditions and trends in vegetation, fire, and fuels. Current Forest Service priorities revolve around forest planning, ecological restoration, ecosystem services, and climate change response. The ecology program has compiled science and reports on the effectiveness of treatments. For annual reports and information on trends across the region refer to: <https://www.fs.usda.gov/detail/r5/plants-animals/?cid=stelprdb5434436>

Further, the scientific literature also confirms the effectiveness of these treatments in altering fire behavior and increasing forest resilience and recovery after fire (e.g., Stevens et al. 2014; Safford et al. 2012).

Partnership Efforts to Reduce Disturbance Risk to Fisher Habitat

Partnerships under the Forest Fuels Reduction and Species Conservation in California Agreements

In 2017, the U.S. Forest Service's Pacific Southwest Region (Region 5), the California Department of Forestry and Fire Protection (CAL FIRE), the National Fish and Wildlife Foundation (NFWF), and Sierra Pacific Industries (SPI) signed a Memorandum of Understanding (MOU) outlining our collaboration to work together to conserve California spotted owls and other wildlife, including Pacific fisher, while coordinating wildfire risk reduction measures on federal, state, and SPI lands in the Sierra Nevada. This MOU was updated and extended in 2019.

Under this first MOU, Region 5, CAL FIRE, and SPI are coordinating fire management strategies, ensuring that treatments align across multiple ownerships to maximize efficacy, and sharing technical information regarding the location of sensitive wildlife habitats. The agreement leverages combined resources to establish a strategic conservation framework to help protect over two million acres of forestlands. The National Fish and Wildlife Foundation (NFWF) is also a partner working on project proposals, grants and agreements, and leveraging available funding to maximize financial efficacy. The partners meet regularly at the regional and local levels to collaboratively implement current year projects and jointly plan out-year projects.

In 2019, we worked with the MOU partners to establish two companion MOUs for Forest Fuels Reduction and Species Conservation in California, which expand this partnership to include the Commercial Forest Landowners (CFL's) in the ranges of the California and Northern spotted owls, including the range of the NCSO subpopulation. The MOU within the range of the California spotted owl is between Shasta Cascades Timberlands LLC, Soper Wheeler Company, W.M. Beaty and Associates, Collins Almanor Forest, Fruit Growers Supply Company, SPI, CAL FIRE, NFWF, and USFS.

The MOU within the range of the Northern spotted owl is between Green Diamond Resource Company, Humboldt Redwood Company, LLC, Mendocino Redwood Company, LLC, Fruit Growers Supply Company, TC&I-Shasta, Bascom Pacific LLC, W. M. Beatty and Associates, Hearst Forests, LLC, Wyntoon Timberlands, LLC, Michigan-California Timber Company, Shasta-Cascades Timberland Company, California Timberlands Investment, Soper Company, Collins Almanor Forest, and Sierra Pacific Industries (these entities collectively referred to as "Commercial Forest Landowners" or "CFLs"), joining with CAL FIRE, NFWF, and USFS.

Across these MOUs, the land managers, land owners, and private lands coordinated by CAL FIRE cover approximately 21 million acres within the NCSO fisher subpopulation and approximately 9 million acres within the SSN fisher subpopulation.

Since signing of the first MOU in 2017, planned, in-progress, and completed fuels reduction treatments on National Forest System (NFS) lands alone within the range of the DPS, have totaled approximately 1,109,000 acres (*see Attachment C for locations*). The MOU partners jointly plan, accomplish, and track fuels reduction work across all our lands (*See Attachments D1 thru H2 for copies of the most recent Partnership maps*).

Partnership to Increase the Use of Fire to Meet Ecological and Other Management Objectives

In 2015, Region 5 entered into an MOU with ten partners to increase the use of fire to meet ecological and other management objectives. Partners participating in the original MOU include Sierra Forest Legacy, California Department of Forestry and Fire Protection, State of California Sierra Nevada Conservancy, Wilderness Society, the Nature Conservancy, the Sierra Club, Center for Biological Diversity, USDI National Park Service-Pacific Region, Northern California Prescribed Fire Council, and the Southern Sierra Prescribed Fire Council. MOU partners are working collaboratively to break down barriers to the use of fire to reduce hazardous fuels and meet ecological and other management objectives, such as restoring habitat. MOU is available at:
<https://www.sierraforestlegacy.org/Resources/Community/PrescribedFire/FireMOUSigned.pdf>

Fuels Management Strategic Investments Partnership

Also in 2015, Region 5 and National Fish and Wildlife Foundation (NFWF) initiated the Pacific Southwest Fuels Management Strategic Investments Partnership (or Fuels Management Partnership) to increase implementation of fuels management projects within California. The goal of this partnership is to identify and fund fuel management projects that reduce the risk of severe wildfire, protect ecological values of USFS restoration investments, and reduce the risk of damage to public and private improvements near USFS lands. The partnership is formalized through a Challenge Cost-Share

agreement supported annually by funding from Region 5. NFWF identifies and works with an appropriate grant applicant to implement projects, leverage additional funds, and sustain the project after the life of the grant, thereby increasing the acres of fuels reduction accomplished on the national forests. Projects benefit habitat for multiple species, including Pacific fisher. More information can be found at: <https://www.nfwf.org/pswfuels/Pages/home.aspx>

Efforts to mitigate effects from illegal marijuana grow sites

Region 5 has been working with numerous partners, including the Pacific Southwest Research Station, Integral Ecology Research Center, and sister law enforcement agencies, to mitigate effects from illegal marijuana grow sites. Much work has been accomplished and is on-going to identify, remove, and reclaim illegal marijuana grow sites throughout the State, especially within the area of the NCSO subpopulation. This includes law enforcement work of Federal and state officers to identify and close down illegal grow sites, the identification of remediation needed at these sites, and partnering to implement the needed remediation. Remediation actions include securing the sites; removal of trash, debris, and other materials and proper disposal of those materials; and re-establishing the composition, structure, pattern, and ecological processes necessary to facilitate terrestrial and aquatic ecosystem sustainability, resilience, and health under current and future conditions.

For example, in 2016, a partnership effort between Integral Ecology Research Center and Region 5 for Grow Site Reclamation on US Forest Service Lands was implemented on the Shasta-Trinity, Lassen, and Plumas National Forests, which remediated 74 individual cultivation plots within 10 complexes. Remediation occurred on 1,145 acres, removing 32 campsites, removing 325,167 feet (61.5 miles / 12.1 tons) of pipe/irrigation line, and removing 17.1 tons of trash.

Research and Monitoring

In addition to our regulatory and conservation strategy efforts, Region 5 is also engaged in long-term monitoring of the Pacific Fisher in the Sierra Nevada, as well as research in the Southern Sierra Nevada in partnership with the USFS Pacific Southwest Research Station. The Region 5 Sierra Nevada Carnivore Monitoring Program is a long-term broad scale population monitoring program to detect potential population changes in fisher and marten throughout National Forest System lands in the Sierra Nevada. The program, led by Dr. Jody Tucker, systematically surveys monitoring units to detect species and identify individuals. Over the last 17 years, the program has completed more than 50,000 visits to monitoring stations. This monitoring has revealed a stable fisher population (Zielinski et al. 2013), and the trend information is currently being updated (*see comments from Jody Tucker in Attachment A*). This monitoring information is also currently being used to assess potential impacts of the tree mortality in the Southern Sierra Nevada. The USFS Region 5 allocates roughly \$300,000 annually to this monitoring program. For more information, see: <https://www.fs.usda.gov/detail/r5/plants-animals/wildlife/?cid=FSEPRD590791>

Along with our long-term monitoring, Forests and Districts often conduct survey efforts to inform project planning. These data are entered into our Forest Service Corporate database, which is regularly shared with USFWS. Forests also partner directly with Research Institutions to monitor fisher populations. For example, the Klamath and Lassen National Forests have partnered with Oregon State University to examine fisher presence and absence on the Forests. The Klamath NF fisher work is part of the broader Klamath-Siskiyou Carnivore Project partnership, while the Lassen NF fisher work has grown

out of the Stirling Management Area fisher reintroduction. Those data can be made available upon request through coordination with our partners.

As well as our long-term monitoring and project level surveys, the USFS Region 5 partners with the Pacific Southwest Research Station (PSW) and University of California Berkeley to learn more about fisher biology, ecology, and conservation needs through intensive research. For example, the Sierra Nevada Adaptive Management Project fisher research, which began in 2007, was a collaboration between UC Berkeley and R5 (<http://snamp.ucanr.edu/teams/fisher.html>). In 2013, the project was transferred to PSW, extended due to delays in implementation of treatments, and renamed the Sugar Pine Fisher Project. Field work ended in 2017 and a final report was completed in May 2018. PSW also leads the Kings River Fisher research project, jointly funded by PSW and Region 5, which also began in 2007. These research endeavors have increased our understanding of fisher demography, habitat, reproductive biology, mortality factors, and conservation needs. In addition, in 2017, PSW added GPS collars to the research tools in order to study more fine-scale habitat use, and effects of the tree mortality in the southern Sierra Nevada. This work is ongoing, and comments in March 2019 and December 2019 from Doctors Rebecca Green and Kathryn Purcell, project leads, describe it in more detail. Region 5 has contributed an average of \$600,000 annually to this research since 2015, and has already committed to contribute \$400,000 in 2020.