scientific and commercial information, we conclude that the NCSO DPS of fishers is not in danger of extinction, nor likely to become so in the foreseeable future.

There are extensive uncertainties regarding population limiting factors for the DPS and the fishers within, more specifics on what comprises suitable habitat (especially related to disturbances) suitability, and the degree to which the threats affect the DPS over the long term. We recommend continuation of population monitoring studies as well as studies assessing the effects of specific stressors on fisher populations.

Status Throughout a Significant Portion of Its Range

Under the Act and our implementing regulations, a species may warrant listing if it is in danger of extinction or likely to become so in the foreseeable future throughout all or a significant portion of its range (SPR). Where the best available information allows the Service to determine a status for the species rangewide, that determination should be given conclusive weight because a rangewide determination of status more accurately reflects the species' degree of imperilment and better promotes the purposes of the Act. Under this reading, we should first consider whether the species warrants listing "throughout all" of its range and proceed to conduct a "significant portion of its range" analysis if, and only if, a species does not qualify for listing as either an endangered or a threatened species according to the "throughout all" language.

Having determined that the NCSO DPS of fisher is not in danger of extinction or likely to become so in the foreseeable future throughout all of its range, we now consider whether it may be in danger of extinction or likely to become so in the foreseeable future in an SPR. The range of a species or DPS can theoretically be divided into portions in an infinite number of ways, so we first screen the potential portions of the range to determine if there are any portions that warrant further consideration. To do the "screening" analysis, we ask whether there are portions of the DPS's range for which there is substantial information indicating that: (1) the portion may be significant; and, (2) the species may be, in that portion, either in danger of extinction or likely to become so in the foreseeable future. For a particular portion, if we cannot answer both questions in the affirmative, then that portion does not warrant further consideration and the species does not warrant listing because of its status in that portion of its range. Conversely, we emphasize that answering both of these questions in the affirmative is not a determination that the species is in danger of extinction or likely to become so in the foreseeable future throughout a significant portion of its range—rather, it is a threshold step to determine whether a more-detailed analysis of the issue is required.

If we answer these questions in the affirmative, we then conduct a more thorough analysis to determine whether the portion does indeed meet both of the SPR prongs: (1) the portion is significant and (2) the species is, in that portion, either in danger of extinction or likely to become so in the foreseeable future. Confirmation that a portion does indeed meet one of these prongs does not create a presumption, prejudgment, or other determination as to whether the species is an endangered species or threatened species. Rather, we must then undertake a more detailed analysis of the other prong to make that determination. Only if the portion does indeed meet both SPR prongs would the species warrant listing because of its status in a significant portion of its range.

At both stages in this process—the stage of screening potential portions to identify any that warrant further consideration, and the stage of undertaking the more detailed analysis of any portions that do warrant further consideration—it might be more efficient for us to address the "significance" question or the "status" question first. Our selection of which question to address first for a particular portion depends on the biology of the species, its range, and the threats it faces. Regardless of which question we address first, if we reach a negative answer with respect to the first question that we address, we do not need to evaluate the second question for that portion of the species' range.

For the NCSO DPS, we chose to address the status "screening" question first, asking whether there are any portions of the range for which there is substantial information indicating that the DPS in that portion may be in danger of extinction or likely to become so in the foreseeable future. To conduct this screening, we considered whether any of the threats acting on the DPS are geographically concentrated in any portion of the range at a biologically meaningful scale (e.g., there are novel threats not seen elsewhere in the DPS; there is a greater concentration or intensity of threats, relative to the same threats seen elsewhere in the range; or there is a disproportionate response to the threats by the individuals in a portion of the range, relative to individuals in the remainder of the range).

In our assessment of the NCSO DPS's overall status, we evaluated throughout its range all of the threats identified in our Species Report, including those with the potential to become significant drivers of the DPS's future status: high-severity wildfire, wildfire suppression activities, and post-fire management actions (Factor A); climate change (Factor A); tree mortality from drought, disease, and insect infestation (Factor A); vegetation management (Factor A);. exposure to toxicants (Factor E); and potential effects associated with small population size (Factor E). As we conducted our threats analysis, we determined that the most significant drivers of the NCSO DPS's future status were: wildfire and wildfire suppression, and the potential for climate change to exacerbate this threat, as well as the threats related to vegetation management and exposure to toxicants. However, for the purposes of our SPR analysis, we examined the entirety of the DPS to evaluate whether there may be a geographic concentration of any of the identified threats in any portion of the range at a biologically meaningful scale.

We found no concentration of any of these threats in any portion of the NCSO DPS's range at a biologically meaningful scale. While high-severity wildfires, and associated suppression activities and post-fire management, act in a site-specific manner, the occurrence of them in the DPS's range is random (i.e., not geographically concentrated in any portion), and the threat of wildfire is present throughout the range. Similarly, climate change, and its associated influence on the potential threat of wildfires, will largely act throughout the NCSO DPS range. All other potential threats either present a risk of manifesting randomly in small, localized places across the range (e.g., toxicant exposure, disease or predation, and vehicle collisions), or manifesting in a focused manner, but still only having localized, site-specific effects (e.g., vegetation management). Regarding small population size, the potential for negative effects can arise in portions of a species' range in instances where there are small, isolated aggregations of individuals. However, there is no evidence to suggest that the NCSO DPS as a whole is experiencing the types of negative effects that result from small population size.

If both (1) a species is not in danger of extinction or likely to become so in the foreseeable future throughout all of its range and (2) the threats to the species are not geographically concentrated in any portion of the DPS at a biologically meaningful scale, then the species can not be in danger of extinction or likely to become so in the foreseeable future in any biologically meaningful portion of the DPS. For the NCSO DPS, we found both: the species is not in danger of extinction or likely to become so in the foreseeable future throughout the DPS, and there is no geographical concentration of threats within the DPS at a biologically meaningful scale. Therefore, no portions warrant further consideration through a more detailed analysis, and the species is not in danger of extinction or likely to become so in the foreseeable future in any significant portion of its range. Our approach to analyzing SPR in this determination is consistent with the court's holding in Desert Survivors v. Deportment of the Interior, No. 16-cv-01165-JCS, 2018 WL 4053447 (N.D. Cal. Aug. 24, 2018).

Determination of Status

Based on the best available scientific and commercial information, we conclude that the NCSO DPS of fishers is not threatened with extinction now or in the foreseeable future.

Final Listing Determination for SSN

Summary of Biological Status and Threats

Current Condition

The SSN DPS of fisher is small and is geographically separated from the remainder of the species. The SSN DPS is found in Mariposa, Madera, Fresno, Tulare, and Kern Counties in California. Historically, the SSN DPS likely extended farther north, but may have contracted due to unregulated trapping, predator-control efforts, habitat loss and fragmentation, or climatic changes. Today the approximate northern boundary is the Tuolumne River in Yosemite National

Park (Mariposa County) and the southern limit is the forested lands abutting the Kern River Canyon, while the eastern limit is the high-elevation, granite-dominated mountains, and the western limit is the low-elevation extent of mixed-conifer forest. Multiple lines of genetic evidence suggest that the isolation of the SSN DPS from other populations of native fishers to the north in California is longstanding and predates European settlement (Knaus et al. 2011, entire; Tucker et al. 2012, entire; Tucker 2015, pers. comm., pp. 1–2).

Estimates for the SSN DPS range from a low of 100 to a high of 500 individuals (Lamberson et al. 2000, entire). A recent estimate of 256 female fishers was based on habitat availability at the time (Spencer et al. 2016, p. 44). Other population estimates are: (1) 125–250 adult fishers based on fisher carrying capacity in currently occupied areas (Spencer et al. 2011, p. 788); and (2) fewer than 300 adult fishers or 276–359 fishers that include juveniles and subadults based on extrapolation from portions of the DPS where fishers have been intensely studied to the range of the entire population (Spencer et al. 2011, pp. 801–802).

An 8-year monitoring study throughout the SSN DPS sampled an average of 139.5 units (range 90–189) comprised of six baited track plate stations per year during the period 2002–2009 showed no declining trend in occupancy (Zielinski et al. 2013, p. 3-4, 10–14; Tucker 2013, pp. 82, 86–91). Recent analyses conducted over a 14-year period (2002-2015) showed that occupancy rates in 2015 were not statistically different from 2002, although rates dipped slightly from 2005-2011 (Tucker 2019 personal communication). Although occupancy patterns show no declining trends, these analyses do not provide details on demographic rates, such as survival and recruitment that provide more detailed information on population growth rates, size, or status.

Another study (SNAMP Fisher Project) of radio-collared fishers monitored from 2007 through 2014 in the northern portion of the SSN DPS on 49 mi^2 (128 km^2) of the Sierra National Forest showed the survival rate (calculated using demographic parameters) of adult males, but not females, is lower than sites in the NCSO DPS. Specifically, Sweitzer et al. stated that their analysis "suggested slightly negative growth ($\lambda = 0.966$) for the period of the research. The upper range for λ (1.155) was well above 1.0, however, suggesting stability or growth in some years. The estimated range for λ was consistent with the estimated population densities, which did not indicate a persistent decline during 4 years from 2008–2009 to 2011–2012" (2015a pp. 781–783; 2015b, p. 10). Additionally, the SNAMP Fisher Project (later called Sugar Pine) was extended through 2017. They reanalyzed the data for radio-collared fishers monitored from 2007 through 2017 (totaling 139 collared fishers) and concluded the population was stable with an estimated lambda of 0.99 (C.I. 0.826 to 1.104) based on female fisher survival rates (Purcell et al. 2018, pp. 5-6, 17). These population estimates for the SSN DPS do not take into consideration the extensive tree mortality that has impacted the habitat from 2015 to present. Research is currently being conducted to determine any potential effects that tree mortality may have on fisher in the SSN DPS, but results are not yet available (Green et al. 2019, entire).

Extensive areas of suitable habitat within the SSN DPS remain unoccupied by fishers, suggesting that habitat may not be the only limiting factor for this DPS (Spencer *et al.* 2015, p. 9). In the SSN DPS, the northern portion of the Stanislaus National Forest is largely unoccupied, with at least one confirmed detection north of the Merced River in Yosemite National Park and the Stanislaus National Forest (Sarah Stock 2020 personal communication). The interaction of all the threats within the SSN DPS are likely limiting northward expansion into what is considered suitable habitat for fisher. Fisher habitat is lacking landscape scale forest heterogeneity in the SSN DPS compared to historic conditions, with wildfire and severe drought disturbances creating large patches of homogenous habitat, which are exacerbated by past logging practices and wildfire suppression (Thompson et al. 2019a, p. 13).

The Sierra tree mortality event is affecting many of the key components of fisher habitat such as complex forest canopy structure and connected closed-canopy forest conditions. Only preliminary analyses have been completed with updated vegetation information from 2016, revealing that almost 40 percent (reduction - 2.3 million acres to 1.4 million acres) of potential fisher foraging habitat has been lost to drought, insects and tree diseases, and wildfire between 2014 and 2016 (Thompson et al. 2019a, p. 7-8). The spatial configuration of fisher foraging habitat also changed, with patch number increasing from 74 to 558 and patch size declining from 31,500 ac (12,748 ha) to 2,600 ac (1,052 ha), indicating a significantly more fragmented landscape (Thompson et al. 2019a, p. 8). Within the same affected area (i.e. not an additive loss), denning habitat availability also declined by almost 40 percent and overall patch size declined from 3,169 ac (1,283 ha) to 2,868 ac (1,161 ha) (Thompson et al. 2019a, p. 9). Current efforts are underway to incorporate the most recent and precise vegetation data into a full revision of the SSN Fisher Conservation Strategy in 2020 (Thompson 2019, personal communication).

The major threats for the SSN DPS are loss and fragmentation of habitat resulting from high-severity wildfire and wildfire suppression activities, vegetation management, and forest insects and tree diseases, as well as direct impacts that include high mortality rates from predation, exposure to toxicants, and potential effects associated with small population size. Potential conservation measures are discussed in more detail in *Voluntary Conservation*

Mechanisms below, and include the development of the Southern Sierra Nevada Fisher Conservation Strategy (Spencer et al. 2016, entire) and the associated interim guidelines that consider the recent tree mortality (Thompson et al. 2019a, entire).

Threats

Potential threats currently acting upon the SSN DPS of fisher or likely to affect the species in the future are evaluated and addressed in the final Species Report (Service 2016, pp. 53–162). Our most recent consideration of new data since 2016 coupled with our reevaluation of the entirety of the best available scientific and commercial information (including comments and information received during the two comments periods associated with the 2019 Revised Proposed Rule) is represented and summarized here.

The immediacy of each threat was assessed independently based upon the nature of the threat and time period that we can be reasonably certain the threat is acting on fisher populations or their habitat. In general, we considered that the trajectories of the threats acting across the SSN DPS's range could be reasonably anticipated over the next 35–40 years. We estimated this timeframe as a result of our evaluation of an array of time periods used in modeling. For example, climate models for areas with fisher habitat, habitat conservation plans (HCPs), and timber harvest models generally predict 50 to 100 years into the future, and forest planning documents often predict over shorter timeframes (10 to 20 years). We considered 40 years at the time of the 2014 Proposed Rule, and given the 5-year time period since, we are modifying the foreseeable future time period to a range of 35–40 years. This is a timeframe that we can reasonably determine that both the future threats and the species' responses to those threats are likely. This time period extends only so far as the predictions into the future are reliable, including a balance of the timeframes of various models with the types of threats anticipated during the 35- to 40-year time period.

As we conducted our threats analysis, we determined that the most significant drivers of the species' future status were: wildfire and wildfire suppression, tree mortality from drought, disease, and insect infestation, and the potential for climate change to exacerbate both of these threats, as well as the threats related to vegetation management and exposure to toxicants. While our assessment of the species' status was based on the cumulative impact of all identified threats, as explained above, we are only presenting our analyses on these specific primary threat drivers for the purposes of this final rule. For detailed analyses of all the other individual threats, we refer the reader to the Species Report (Service 2016, entire).

Wildfire and Wildfire Suppression

In the SSN DPS, the mean proportion of high severity fire and patch size have shifted compared to historical conditions (Safford and Stevens 2017, p. viii.) with increases in the frequency of large wildfires greater than 24,700 acres (9,996 (ha) (Westerling 2016, pp. 6–7). Changes in future climate continue to predict large increases in the area burned by wildfire (Dettinger et al. 2018, p. 72). We expect these predicted changes to the fire regime to reduce the habitat available for fisher in the SSN DPS (see Climate Change section for further detail on future conditions).

Recent analyses show habitat loss from high severity fire throughout the SSN DPS (Thompson et al. 2019a, p. 10). For this new analysis of effects of wildfire on fisher habitat in the southern Sierra Nevada, high severity fire data was analyzed from 2003 to 2017 (CBI 2019, pp. 26–28) and showed a loss of fisher denning (8.5 percent), resting (9.3 percent), and foraging

(7.6 percent) habitat of approximately 25 percent, with most of the loss occurring between 2013 and 2017 (approximately 22 percent) (CBI 2019, p. 28). However, some areas of denning, resting, and foraging habitat overlap each other, so the total amount of habitat lost to high severity is likely less than 25 percent. In addition, the wildfires occurring on the Sierra and Sequoia National Forests bisected and disrupted connectivity between—or reduced the overall size of—key core areas as identified in the SSN fisher conservation strategy, likely inhibiting northward population expansion (Spencer et al. 2016, p. 10; CBI 2019, pp. 26–28).

Prior to these substantial habitat changes as a result of recent fire, the northern portion of the SSN DPS had lower fisher occupancy in units burned by either prescribed burning or wildfire but less than 1 percent of the study area burned; however, there was no consistent negative effect of fire on fisher's use of habitat, likely because most fires burned at lower severities and maintained habitat elements important to fisher (Sweitzer et al. 2016a[redacted], pp. 208, 214, and 221-222). Results of modeling the variables of forest structure important to fishers for denning habitat on the Sierra National Forest and Yosemite National Park suggest that suitable denning habitat is maintained in burned forests, though primarily those with low-severity wildfire conditions, as less than 5 percent of areas burned at high severity were associated with a high probability of fisher den presence (Blomdahl 2018, entire).

Fisher avoided areas affected by high- and moderate-severity wildfires in the French (2014) and Aspen Fires (2013) and there was a higher probability of finding fishers in ravines or canyon bottoms in combination with unburned or lightly burned patches (Thompson et al. 2019a, pp. 13–14). In our final Species Report we reported fisher use of high severity fire (Hanson 2015, p. 500; Service 2016, p. 66), so results from these studies may differ due to the type of analysis used, the values chosen to identify wildfire severity classes, or the 2–4 year vs. 10-year post-wildfire sampling period (Thompson et al. 2019a, pp. 15–18). Without demographic data on age class, survival, or reproduction, it is difficult to say with certainty whether fisher use of post-wildfire landscapes is for dispersal or whether such areas act as population sinks (Thompson et al. 2019a, pp. 17–18).

When considering the best available scientific and commercial information regarding wildfire and wildfire suppression activities, we maintain that wildfire is a natural ecological process. Forests that burn at lower fire intensities can create important habitat elements to fisher (e.g., den trees) within a home range such that the burned habitat may continue to support both fisher foraging and reproduction. As stated above, wildfire has already resulted in habitat loss and is increasing in terms of frequency, severity, and magnitude in the Sierra Nevada. There are mixed findings as to whether current conditions are outside of the natural range of variation and wildfire severity is increasing (Mallek et al. 2013, pp. 11–17; Stephens et al. 2015, pp. 12–16; Hanson and Odion 2016, pp. 12–17; Odion et al. 2016, entire; Spies et al. 2018, p. 140), but the scientific consensus accepts that mixed conifer forests were characterized by areas burned at low-, moderate-, and high-severity, with higher proportions of low-severity than is currently observed (Safford and Stevens, p. 48-50).

We conclude that if the severity and extent of wildfires are such that substantial areas of canopy and large trees are lost, multiple decades of forest growth and structural development are necessary for those burned areas to support fisher reproduction. Therefore, based on the research and data currently available (as described above and in Service 2014, p. 64; Sequoia Forest Keeper 2019, pers. comm.; Spencer et al. 2016, p. 10), we believe that large high-severity fires that kill trees and significantly reduce canopy cover in fisher habitat (of high and intermediate quality) are likely to negatively affect fisher occupancy and reproduction. In contrast, burned areas that contain all fire severities are likely to provide habitat consistent with the needs of fishers, and the degree to which wildfire affects fisher populations depends on the forest type, landscape location, patch configuration, size, and intensity of the wildfire.

This could be a lead-in ¶. Then describe wh exactly we are seeing

Climate Change

In the Sierra Nevada region, mean annual temperatures have generally increased by around 1 to 2.5 degrees °F (0.5 to1.4 °C) over the past 75–100 years (North et al. 2012, p. 25). By the end of the 21st century, temperatures are projected to warm within the SSN DPS by 6 to 9 °F (3.3 to 5 °C) on average, enough to raise the transition from rain to snow during a storm by about 1,500 to 3,000 ft (457 to 914 m) (Dettinger et al. 2018, p. 5). In addition, California recently experienced extreme drought conditions due to lack of precipitation from 2007–2009 and from 2012–2014 (Williams et al. 2015, pp. 6823–6824). Climate change likely contributed to the 2012–2014 drought anomaly, and increases the overall likelihood of drier conditions, including extreme droughts, within the SSN DPS into the future (Williams et al. 2015, pp. 6819, 6826; Bedsworth et al. 2018, p. 25).

The observed increases in wildfire activity and tree mortality in the SSN DPS are partially due to climate change. The red fir forests in the SSN DPS, currently found at the upper edge of fisher elevation range, are expected to have more frequent fire with species composition shifting to more fire-prone species, but it is unclear whether these forests will become more central to the range of fisher with warming climate conditions or if it will remain on the elevation edge of the SSN DPS (Restaino and Safford 2018, p. 497; Service 2016, pp. 87, 138–139).

Climate change will likely continue to increase tree mortality events into the future because drought conditions will increase which will continue to weaken trees and make them susceptible to bark beetles and disease (Millar and Stephenson 2015, pp. 823–826; Young et al. 2017, pp. 78, 85).

Overall, at this time, the best available scientific and commercial information suggest that changing climate conditions (particularly increasing air temperatures coupled with prolonged and more frequent drought conditions) are exacerbating other threats to the fishers and their habitat within the SSN DPS, including high-severity wildfires, and tree mortality. Please see additional discussion about potential impacts to fishers or their habitat associated with wildfire (Wildfire and Wildfire Suppression, above) and tree mortality (Tree Mortality from Drought, Disease, and Insect Infestation below).

Tree Mortality from Drought, Disease, and Insect Infestation

The recent drought and subsequent beetle outbreak in the Southern Sierra Nevada from 2012 to 2015 is one of the most severe and largest beetle outbreaks in recent decades (Fettig et al. 2018, pp. 176). Over half of the potential fisher habitat in the SSN DPS has been significantly impacted by canopy loss from tree mortality, which is disproportionately affecting the largest conifer trees and which are most likely to serve as den or rest trees for fisher (CBI 2019, pp. 3–9, 29; Fettig et al. 2019, pp. 167–168). Although fisher often use hardwoods for denning and resting, conifers appear to be more important for denning and resting in the SSN DPS than other fisher populations, and overall den tree size is much larger than other portions of the fisher range, so the loss of large trees has the potential to disproportionately alter den availability in the landscape (Green et al. 2019c, pp. 139). Drought effects on over 6 million hectares of forest in California occurred over a multi-year period from 2011-2015 and over 500 million large trees have been affected, primarily from canopy water content loss, with some of the largest impacts to forested areas within the range of the SSN DPS (Asner et al. 2016, pp. E252). These trees, spread over millions of hectares of forest, are more vulnerable in future droughts, likely resulting in death and altering future forest structure, composition, and function (Asner et al. 2016, p. E253; Fettig et al. 2018, p. 176).

There is limited information on the direct impacts to fisher or their habitat from tree mortality; however, the combination of drought, forest insects, disease, and fire has led to a decrease in the number and size of suitable foraging and denning habitat patches for fisher (Thompson et al. 2019b, pp. 8–9). The habitat changes associated with drought, forest insects, disease, and fire may result in increased use of areas by large predators that in turn could increase predation rates on fisher (Thompson et al. 2019b, pp. 15; also see Predation and Disease above in the General Species Information and Summary of Threats above). The usual pattern of localized outbreaks and low density of tree-consuming insects and tree diseases are beneficial and can create snags, providing structures conducive to rest and den site use by fishers or their prey. This large scale beetle kill is concerning because U.S. Forest Service personnel are already reporting snag failures, indicating these snags may fall at a faster rate than other methods of snag creation (e.g. wind, fire, age; Larvie et al. p. 11). Further, large, area-wide epidemics of forest disease and insect outbreaks may displace fishers if canopy cover is lost and salvage and thinning prescriptions in response to outbreaks degrade the habitat (Naney et al. 2012, p. 36; Tucker 2019, personal communication).

Preliminary information in the SSN DPS indicates fishers are avoiding areas with tree mortality and are more likely to be found in areas close to streams, drainages, and ravines where tree mortality effects were dampened (Green et al. 2019b, entire). In addition, increased tree mortality on the landscape may be associated with reduced female fisher survival within the SSN population due to increased stress hormones (cortisol) (Kordosky 2019, pp. 31–34, 36–40, 54–61, 65–68, 94); however, reduced fisher survival is also likely influenced by other factors . Although other studies indicate fishers tolerate certain levels of canopy loss in small scale projects, fisher response to tree mortality may have been influenced by the large scale of the tree mortality event (Thompson et al. 2019a, p. 16).

Loss of canopy cover and large trees from tree mortality caused by insects and tree diseases likely reduces habitat suitability for fishers, but it is unknown if the level of habitat loss will significantly impact the SSN DPS throughout its range. Although fishers are keying in on riparian areas with intact forest canopy, it is uncertain how patches with sufficient canopy cover are connected in this changing landscape. It is likely that tree mortality will continue to be a threat into the future due to predicted increases in drought conditions that will likely continue to weaken trees and make them susceptible to bark beetles and disease (Millar and Stephenson 2015, pp. 823–826; Young et al. 2017, pp. 78, 85), so we expect this threat will continue to exacerbate conditions for fishers on the landscape.

Vegetation Management

In the SSN DPS, we approximated fisher habitat change using a vegetation trend analysis to track changes in forests with large structural conditions thought to be associated with fisher habitat (Service 2016, p. 98-101). Available data limited us to using predefined structure conditions describing forests with larger trees (greater than 20 in (50 cm)), realizing this may not include all vegetation types used by fishers. This analysis showed that net loss of forests with larger structural conditions in the SSN DPS from 1993 to 2012 was 6.2 percent across all ownerships, which equates to a loss of 3.1 percent per decade.

In the single analysis where fisher habitat was actually modeled and tracked through time for the SSN DPS, ingrowth of fisher habitat actually replaced habitat lost by all disturbances between 1990 and 2012, showing a net increase in fisher habitat at the female home range scale, albeit this net increase is less than 8 percent over 30 years (Spencer et al. 2016, pp. 44, A-21, A-26). However, the authors of this report have since cautioned that these conclusions may no longer be accurate based on "dramatic changes [that] have occurred in Sierra Nevada mixed conifer forests due to drought and extraordinary tree mortality" (Spencer et al. 2017, p. 1). Consequently, they recommended delaying application of habitat conservation targets until vegetation data can be updated and fisher habitat condition reassessed (Spencer et al. 2017, pp. 1–2). Hence, although our earlier analysis concluded that fisher habitat in the SSN DPS may actually be increasing, we can no longer support that conclusion based on recent vegetation mortality.

In one portion of the SSN DPS, fishers were less influenced by vegetation management activities than by initial site conditions (Purcell et al. 2018, p. 60), highlighting the importance of ensuring that post-treatment structural complexity and canopy cover reflect pre-treatment conditions. Overall, vegetation management in this study area resulted in short-term avoidance of the treated units, with no longer-term shift in fisher behavior, but less than 1 percent of the study area was treated each year (Purcell et al. 2018, p. 69).

On all ownerships combined, loss of forest with old-forest structures in the past two decades (1993-2012) was 3.1 percent per decade as a result of all disturbance types within the SSN DPS. Additionally, fisher habitat appeared to be increasing until recent vegetation mortality due to fires and drought. However, it is difficult to conclude the degree to which vegetation management threatens fishers in the SSN DPS. Given the large home range of fishers and the geographic extent of forest management activities throughout the range of the SSN DPS, some fisher individuals are likely affected as a result of habitat impacts (e.g., Purcell et al. 2018, pp. 60–61). In addition, still other factors unrelated to habitat may be limiting fisher distribution. Consequently, based on the best available scientific and commercial information, we find that some levels of vegetation management may threaten fisher and will continue to do so in the foreseeable future, but many of the effects are exacerbated by other forms of habitat loss such as tree mortality from drought and severe wildfires.

Exposure to Toxicants

As described above in the general threats section, rodenticides analyzed as a threat to the SSN DPS of fishers include first- and second-generation anticoagulant rodenticides and neurotoxicant rodenticides. Both the draft and final Species Reports detail the exposure of the SSN DPS of fishers to rodenticides in the Sierra Nevada (Service 2014, pp. 149–166; Service 2016, pp. 141–159). Data available since the completion of the final Species Report in 2016 continue to document exposure and mortalities to fishers from rodenticides in the SSN DPS (Gabriel and Wengert 2019, unpublished data, entire). Data for 97 fishers collected in the range of SSN DPS in the period 2007–2018 indicate 83 fishers (86 percent) tested positive for one or more rodenticides (Gabriel and Wengert 2019, unpublished data), while 5.2 percent of known-cause SSN DPS fisher deaths from 2007 through 2014 were attributable to rodenticide toxicosis (6 of 115 total known-cause mortalities) (Gabriel et al 2015, p. 6). The probability of fisher mortality increases with the number of anticoagulant rodenticides to which a fisher has been exposed (Gabriel et al. 2015, p. 15). Mortalities due to rodenticide toxicosis have increased from 5.6 to 18.7 percent since collection and testing of fisher mortalities began in 2007 (Gabriel and Wengert 2019, unpublished data). From 2015 to 2018, additional SSN DPS fisher mortalities due to both anticoagulant and neurotoxicant rodenticides have been documented (Gabriel and Wengert 2019, unpublished data, p. 4).

In order to evaluate the risk to SSN DPS fishers from illegal grow sites, we use a Maximum Entropy model that was developed to identify high and moderate likelihood of illegal grow sites within habitat selected for by fisher (Gabriel and Wengert 2019, unpublished data, pp. 7–10). This model indicates that 22 percent of habitat modeled for SSN DPS fishers is within areas of high and moderate likelihood for marijuana cultivation. The extent to which the use of toxicants occurs on legal private land grow sites within the SSN DPS, as well as other agricultural, commercial, and public land sites within the range of the SSN DPS of fisher (and habitats that fishers select for) is unknown.

Is there any info on cleanup efforts (Same comment as for NCSO.

At this time, our evaluation of the best available scientific and commercial information regarding toxicants and their effects on fishers leads us to conclude that individual fishers within the SSN DPS have died from toxicant exposure. Data indicate a total of 19 mortalities specifically within the monitored fisher populations (in both NCSO and SSN DPSs in California) have been directly caused by toxicant exposure (Gabriel and Wengert 2019, unpublished data, p. 5). We view toxicants as a potentially significant threat given the small population size of the

SSN DPS fishers because of the reported exposure rate of toxicants in the SSN DPS, reported mortalities of SSN DPS fishers from toxicants, the variety of potential sublethal effects due to exposure to rodenticides (including potential reduced ability to capture prey and avoid predators), and the degree to which illegal grow sites overlap with the range and habitat of the SSN DPS of fisher.

The effect of these impacts to the SSN DPS is of particular concern because of the small number of individuals in the SSN DPS. The exposure rate of more than 80 percent of fisher carcasses tested in the SSN DPS has not declined between 2007 and 2018 (Gabriel and Wengert 2019, unpublished data, pp. 3–4), while toxicosis has increased since 2007 (Gabriel et al. 2015, pp. 6-7). We do not know the exposure rate of live fishers to toxicants because this data is difficult to collect. In addition, the minimum amount of anticoagulant and neurotoxicant rodenticides required for sublethal or lethal poisoning of fishers is currently unknown; however, we have evidence of fisher mortality and sublethal effects as a result of rodenticides. Although uncertainty existing in the effect of toxicants on the SSN DPS, in a small population, such as the SSN DPS of fisher, the lethal and sublethal effects of toxicants on individuals have the potential to have population-level effects and reduce the resiliency of the DPS as a whole. Overall, rodenticides are a threat to fisher within the SSN DPS now and in the foreseeable future.

Potential for Effects Associated With Small Population Size

Some information is available that demonstrates fisher's vulnerability to small population effects in the SSN DPS, including overall low genetic diversity (mitochondrial DNA haplotype and nuclear DNA allelic richness) for the entire SSN DPS, limited gene flow, and existing barriers to dispersal (Wisely et al. 2004, pp. 642–643; Knaus et al. 2011, p. 7; see also additional discussion in Service 2016, pp. 134–137; Tucker et al. 2014, pp. 131-134), albeit some of these barriers allow some gene flow (Tucker et al. 2014, p. 131). However, the recent tree mortality and several recent large-scale fires acting on the narrow, linear range of the SSN DPS are likely to increase barriers to dispersal, potentially preventing northward expansion, particularly for females, given female genetic connectivity is facilitated by dense forest habitat (Tucker et al. 2017, p. 10).

At this point in time, the SSN DPS is considered relatively small, especially when taking into account the original/historical range of the species within the West Coast states, and the population growth rates does not indicate that the SSN DPS is increasing. The best available information suggests the SSN DPS is expected to remain isolated from other fisher (as has been apparent since pre-European settlement). The SSN DPS is likely to remain small into the future, primarily given the other stressors that have the potential to exacerbate the impacts from threats on small populations. In addition, average litter size for the SSN DPS is the lowest reported for the species, potentially due to diet limitations, smaller body size, and lower genetic diversity compared to other populations (Green et al. 2018b, pp. 545, 547), further exacerbating the impacts of threats on small populations. Estimates of fisher population growth rates for the SSN DPS do not indicate any overall positive or negative trend.

The SSN DPS is estimated to range anywhere in size from 100 to 500 individuals (Service 2016, pp. 48–50). Population growth rate analyses have been estimated as 0.97 (C.I. 0.79–1.16) from 2007-2014 throughout the SSN DPS (Sweitzer et al. 2015a, p. 784), and more recently 0.99 (C.I. 0.826 to 1.104) from 2007-2017 in a small portion of the SSN DPS at Sugar Pine (Purcell et al. 2018, pp. 5-6, 17). Available population estimates and trend information for the SSN DPS does not take into consideration extensive tree mortality that has impacted the habitat from 2015 to present. Research is currently being conducted to determine any potential effects that tree mortality may be having on the SSN DPS, but results are not yet available (Green et al. 2019, entire). At this point in time, we do not have sufficient information to predict whether population trends of the SSN DPS will be positive or negative into the foreseeable future.

Overall, a species (or DPS) with relatively few individuals may be a concern when there are significant threats to the species. The SSN DPS is considered relatively small and has not appeared to grow or expand, despite the availability of unoccupied suitable habitat. The SSN DPS has been found to have relatively low genetic diversity, but there is currently no evidence of inbreeding depression. The small population may make the SSN DPS more vulnerable to threats, but there is no evidence at this time that small populations are causing impacts such loss of genetic variability or large fluctuations in demographic parameters of the SSN DPS.

Predation and Disease

A general description of disease and predation on fishers overall was provided earlier (see General Species Information and Summary of Threats above). Specific to the SSN DPS, of 94 fisher mortalities analyzed, 71 percent were a result of predation and 14 percent were caused by disease (Gabriel et al. 2015, p. 7, Table 2). Further, predation may be one of the limiting factors in overall population growth for fishers in the SSN DPS. For example, research on effects of mortalities on population growth of fishers in the SSN DPS found that reducing predation by 25 or 50 percent would increase lambda from 0.96 to 1.03 or 1.11, respectively; conversely, removing all mortality sources but predation would only increase lambda to 0.97

(Sweitzer et al. 2016b, p. 438). While we didn't consider this threat in the 2019 proposed rule, we received information during a public comment period that identified this information. Because our current analysis focuses on SSN as a separate DPS, we believe it is important to consider and identify the levels of mortality associated with this threat, given the small population size of this DPS.

Vehicle Collisions

In the SSN DPS, vehicle collisions contributed to 8 percent of documented causes of mortality for fishers (Sweitzer et al. 2016, p. X). At the northernmost boundary of the SSN DPS, 10 fisher roadkill mortalities have been documented in Yosemite National Park over the past two decades (Service 2016, p. X). Although many factors affect dispersal and northward population expansion, it is likely that roads and associated traffic in Yosemite National Park combined with other stressors may inhibit northward expansion of the SSN DPS (Spencer et al. 2015, p. X). While we didn't consider vehicle collision in the 2019 proposed rule, we are now including it in this analysis because we are considering the SSN DPS individually from the NCSO DPS as described above. We believe the level of mortality associated with this threat is important to consider given the small population size of this DPS.

<u>Existing Regulatory Mechanisms</u>

Forest Service

A number of Federal agency regulatory mechanisms pertain to management of fisher (and other species and habitat). Most Federal activities must comply with the National Environmental Policy Act of 1969, as amended (NEPA) (42 U.S.C. 4321 et seq.). NEPA requires Federal agencies to formally document, consider, and publicly disclose the environmental impacts of major Federal actions and management decisions significantly affecting the human environment. NEPA does not regulate or protect fishers, but it requires full evaluation and disclosure of the effects of Federal actions on the environment. Other Federal regulations affecting fishers are the Multiple-Use Sustained Yield Act of 1960, as amended (16 U.S.C. 528 et seq.) and the National Forest Management Act of 1976, as amended (NFMA) (90 Stat. 2949 et seq.; 16 U.S.C. 1601 et seq.).

The NFMA specifies that the Forest Service must have a land and resource management plan to guide and set standards for all natural resource management activities on each National Forest or National Grassland. Additionally, the fisher has been identified as a species of conservation concern by the Forest Service in the SSN DPS; thus all Forest Plans within the DPS include Standards and Guidelines designed to benefit fisher. Overall, per USFS guidelines under the NFMA, planning rules must consider the maintenance of viable populations of species of conservation concern.

In 2004 the Forest Service amended the Forest Plans in the SSN DPS with the Sierra Nevada Forest Plan Amendment (SNFPA; USFS 2004, entire). The SNFPA included measures to increase late-successional forest, retention of important wildlife structures such as large diameter snags and coarse downed wood, and management of about 40 percent of the plan area as old forest emphasis areas. The SNFPA also established a 602,100 ha (1,487,800 ac) Southern Sierra Fisher Conservation Area (SSFCA) with additional requirements intended to maintain and expand the fisher population of the southern Sierra Nevada. Conservation measures for the SSFCA includes maintaining a minimum of 50 percent of each watershed in mid-to-late successional forest (28 cm [11 in] dbh and greater) with forest canopy closure of 60 percent or more. The plan also includes seasonal protections for known fisher natal and maternal den sites. The Forest Service is currently updating the NFMPs within the SSN DPS according to the Forest Service 2012 Planning Rule (36 CFR Part 219). A conservation strategy is in progress (described below in SSN Voluntary Conservation Measures) that will provide fisher specific guidance for the updated NFMPs.

National Park Service

Statutory direction for the National Park Service lands within the SSN DPS is provided by provisions of the National Park Service Organic Act of 1916, as amended (54 U.S.C. 100101). Land management plans for the National Parks within California do not contain specific measures to protect fishers, but areas not developed specifically for recreation and camping are managed toward natural processes and species composition and are expected to maintain fisher habitat where it is present. In addition, hunting and trapping are generally prohibited in National Parks (e.g., 16 U.S.C. sections 60, 98, 127, 204c, and 256b).

Rodenticide Regulatory Mechanisms

The threats posed to fishers from the use of rodenticides are described under "Exposure to Toxicants," above. In the 2016 final Species Report (Service 2016, pp. 187–189), we analyzed whether existing regulatory mechanisms are able to address the potential threats to fishers posed from both legal and illegal use of rodenticides. As described in the 2016 final Species Report, the use of rodenticides is regulated by several Federal and State mechanisms (e.g., Federal Insecticide, Fungicide, and Rodenticide Act of 1947, as amended, (FIFRA) 7

U.S.C. 136, et seq.; California Final Regulation Designating Brodifacoum, Bromadiolone, Difenacoum, and Difethialone (Second Generation Anticoagulant Rodenticide Products) as Restricted Materials, California Department of Pesticide Regulation, 2014). The primary regulatory issue for fishers with respect to rodenticides is the availability of large quantities of rodenticides that can be purchased under the guise of legal uses, but are then used illegally in marijuana grows within fisher habitat. Both the Environmental Protection Agency (EPA) and California's Department of Pesticide Regulation are attempting to reduce the risk posed by second-generation anticoagulants through the 2008 Risk Mitigation Decision for Ten Rodenticides (EPA 2008, entire), which issued new legal requirements for the labeling, packaging, and sale of second-generation anticoagulants, and through a rule effective in July 2014, which restricts access to second-generation anticoagulants ([redacted]) .

State Regulatory Mechanisms

California

At the time of the 2014 Proposed Rule, fishers were a Candidate Species in California; thus, take (under the CESA definition) was prohibited during the candidacy period. On June 10, 2015, CDFW submitted its status review of the fisher to the California Fish and Game Commission, indicating that listing of the fisher in the Southern Sierra Nevada Evolutionarily Significant Unit (ESU) was warranted as threatened (CDFW 2015, entire). It remains illegal to intentionally trap fishers in California (Cal. Code Regs. title 14, §460 (2017).

See prev comment on listing date by CF+G commission

The California Environmental Quality Act (CEQA) can provide protections for a species that meets one of several criteria for rarity (CEQA 15380). Fishers in the SSN DPS meet these criteria, and under CEQA, a lead agency can require that adverse impacts be avoided, minimized, or mitigated for projects subject to CEQA review that may impact fisher habitat. All non-Federal forests in California are governed by the State's Forest Practice Rules (FPR) under the Z'Berg Nejedly Forest Practice Act of 1973, a set of regulations and policies designed to maintain the economic viability of the State's forest products industry while preventing environmental degradation. The FPRs do not contain rules specific to fishers, but they may provide some protection of fisher habitat as a result of timber harvest restrictions.

Voluntary Conservation Mechanisms

There are currently two MOU agreements in California within the range of the SSN DPS for wildfire and fuels management, ~~but they have no specific conservation measures for fisher~~. The first MOU was signed in 2015 by Sierra Forest Legacy, California Department of Forestry and Fire Protection, State of California Sierra Nevada Conservancy, The Wilderness Society, The Nature Conservancy, The Sierra Club, Center for Biological Diversity, USDI National Park Service-Pacific Region, Northern California Prescribed Fire Council, Southern Sierra Prescribed Fire Council, and the USDA, Forest Service, Pacific Southwest Region. The MOU is titled "Cooperating for the purpose of increasing the use of fire to meet ecological and other management objectives." The purpose of this MOU is to document the cooperation between the parties to increase the use of fire to meet ecological and other management objectives. A second MOU was signed in 2017 by National Fish and Wildlife Foundation, and the USDA, Forest Service, Pacific Southwest Region, Regional Office. The MOU is titled "Pacific Southwest Fuels Management Strategic Investment Partnership." The purpose of this agreement is to document the cooperation between the parties to implement a hazardous fuels management program that

Insert language: While neither MOU contains specific fisher conservation activities, projects that reduce the likelihood of catastrophic wildlife provides benefit of reducing hab loss.

reduces the risk of severe wildfire, protects ecological values, and reduces the change of damage to public and private improvements. Both of these more broad fuel reduction MOUs provide collaboration between Federal partners and non-governmental partners to organize and fund fuel reduction projects within the SSN DPS, which could reduce the impact of large-scale high severity fire. So far, no projects have been funded within the SSN DPS.

The Sierra Nevada Fisher Working Group, which includes Conservation Biology Institute, Sierra Nevada Conservancy, USDA Forest Service, National Park Service, US Fish and Wildlife Service, and California Department of Fish and Wildlife, completed a conservation strategy in 2016 (Spencer et al. 2016, entire). The authors of the conservation strategy later released a changed circumstances letter due to new tree mortality information (Spencer et al. 2017, entire). The changed circumstances letter provides details on the conservation measures that may no longer be applicable and an interim process for designing and evaluating vegetation management projects. Current benefits that still exist for fisher from the conservation strategy and the changed circumstances letter include long-term desired conditions representing a range of characteristics to strive for in various areas to inform fine-scale assessment of key fisher habitat elements, including their connectivity within potential home ranges and across the landscape (Spencer et al. 2017, pp. 2–6). A revised/final conservation strategy that addresses the new tree mortality information is still in progress by the Conservation Biology Institute. However, preliminary Draft Interim Recommendations from February 2020 recognize the importance of stabilizing key habitat, restoring landscape permeability, and promoting landscape heterogeneity while offering a suite of suggestions to mitigate potential negative effects of management actions (Thompson et al. 2019, pp. 17–33).

Resiliency, Redundancy, and Representation

In this section, we use the conservation biology principles of resiliency, redundancy, and representation to evaluate how the threats, regulatory mechanisms, and conservation measures identified above relate to the current and future condition of the SSN DPS.

Resiliency is defined the ability of populations to withstand stochastic events (events arising from random factors). Measured by the size and growth rate of populations, resiliency gauges the probability that the populations comprising a species (or DPS) are able to withstand or bounce back from environmental or demographic stochastic events.

Redundancy is defined as the ability of a species (or DPS) to withstand catastrophic events, and may be characterized by the degree of distribution of the species, either as individuals of a single population or as multiple populations, within the species' ecological settings and across the species' range. The greater redundancy a species exhibits, the greater the chance that the loss of a single population (or a portion of a single population) will have little or no lasting effect on the structure and functioning of the species as a whole.

Representation is defined as the ability of a species (or DPS) to adapt to changing environmental conditions. Measured by the breadth of genetic or environmental diversity within and among populations, representation gauges the probability that a species is capable of adapting to environmental changes.

As noted above, the resiliency of species'population(s), and hence an assessment of the species' overall resiliency, can be evaluated by population size and growth rate. While data on these parameters is often not readily available, inferences about resiliency may be drawn from other demographic measures. In the case of the SSN DPS, the population size component of resiliency may be lower than historical levels to some degree because the total population size is small and fragmented and has been reduced in distribution relative to historical levels.

Threats acting on a species or DPS that cause losses of individuals from a population have the potential to affect the overall resiliency of that population, and should losses occur at a scale large enough that the overall population size and growth rate are negatively impacted, this could reduce the population's ability to withstand stochastic events. The SSN DPS faces a variety of threats that will result in losses of individual fishers or impediments to population growth, including loss and fragmentation of habitat (i.e., from high-severity wildfire and wildfire suppression actions, climate change, [redacted], vegetation management, and development) and potential direct impacts to individuals (e.g., increased mortality, decreased reproductive rates, increased stress/hormone levels, alterations in behavioral patterns) from wildfire, increased temperatures, increased tree mortality, disease and predation, exposure to toxicants, vehicle collisions, and potential effects associated with small population size. These threats cumulatively play a large role in both the current and future resiliency of the DPS. Of greatest importance at this time are:

(1) The long-term suitability of habitat conditions throughout the range of the SSN DPS given the continued presence/extent of high-severity and wide-ranging wildfires and prolonged drought conditions that exacerbate tree mortality from drought, disease, and insect infestation. These conditions: (a) Reduce the availability of the natural resources (e.g., appropriate canopy cover, old growth forest structure with large trees and snags, patch size) that the species relies on to complete its essential life-history functions, (b) contribute to increased stress hormones

(cortisol) and reduced female fisher survival (as noted in one study in a portion of the SSN DPS), and (c) increase habitat fragmentation within and between populations.

(2) The sustained presence of toxicants from marijuana grow sites across a likely significant proportion of the landscape that contribute to continued fisher mortalities and sublethal effects. Fisher mortalities continue to occur either by direct consumption or sublethal exposure to anticoagulant rodenticides, the latter of which may increase fisher death rates from other impacts such as predation, disease, or intraspecific conflict. In a small population, such as the SSN DPS of fisher, the lethal and sublethal effects of toxicants on individuals have ~~an even~~ greater potential to reduce the resiliency of the population.

(3) Continued fragmentation of habitat in conjunction with the isolation and potential inbreeding of the SSN DPS, especially when taking into account the threats of toxicant exposure and habitat losses. The ongoing threats increase this DPS's vulnerability to extinction from stochastic events. Regardless of this DPS's potential for growth into the small amount of available but unoccupied suitable habitat present, we do anticipate this DPS will be small into the long-term future (see also Service 2016, pp. 133–137). Comments on the 2014 Proposed Rule and 2019 Revised Proposed Rule received to date generally agree that the SSN DPS is small.

The SSN DPS of fisher has maintained its presence across its current range despite the degree of habitat loss and fragmentation from prolonged drought conditions and wildfire impacts, coupled with mortalities from toxicants (both anticoagulant and neurotoxicant rodenticides), and at least some reduced female survival associated with increased stress hormones and reduced habitat suitability documented in a portion of the SSN DPS (see "Forest

Insects and Tree Diseases," above). However, considering the best available science and information at this time, it is likely that the resiliency of the SSN DPS will decrease in the near-term future given the cumulative impacts associated with current climate change model predictions for continued periodic but prolonged drought conditions, predictions of continued and increased intensity of wildfires and subsequent habitat loss and fragmentation in the southern Sierra Nevada, the high likelihood of continued presence and spread of forest insect and tree diseases, and the low likelihood that a significant proportion of existing toxicants on the landscape would be removed in the near-term future.

With regard to redundancy, multiple, interacting populations across a broad geographic area or a single wide-ranging population (redundancy) provide insurance against the risk of extinction caused by catastrophic events. Redundancy is limited across the range of the SSN DPS as a result of the DPS being a single fragmented population distributed over a relatively confined geographic area for a carnivorous mammal. The limited redundancy of the SSN DPS decreases the DPS's chance of survival in the face of potential environmental, demographic, and genetic stochastic factors and catastrophic events (extreme drought, wildfire, Allee effects, etc.).

Lastly, we consider representation across the SSN DPS of fisher to be limited at this point in time, considering the DPS's existence as only a single fragmented population. The SSN DPS exists in a limited range of environmental conditions and has narrow representation in the environments that it occupies. An additional concern for current and future representation in the SSN DPS of fisher is that fragmented populations can be more susceptible to local declines and associated loss of genetic diversity. Overall, SSN DPS fishers are represented across a small, fragmented range and occur in small numbers.

Determination

Section 4 of the Act (16 U.S.C. 1533) and its implementing regulations (50 CFR part 424) set forth the procedures for determining whether a species meets the definition of "endangered species" or "threatened species." The Act defines an "endangered species" as a species that is "in danger of extinction throughout all or a significant portion of its range," and a "threatened species" as a species that is "likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range." The Act requires that we determine whether a species meets the definition of "endangered species" or "threatened species" because of any of the following factors: (A) The present or threatened destruction, modification, or curtailment of its habitat or range; (B) Overutilization for commercial, recreational, scientific, or educational purposes; (C) Disease or predation; (D) The inadequacy of existing regulatory mechanisms; or (E) Other natural or manmade factors affecting its continued existence.

Status Throughout All of Its Range

We evaluated threats to the SSN DPS of fishers and assessed the cumulative effect of the threats under the section 4(a)(1) factors. Our 2016 Species Report (Service 2016, entire) is the most recent detailed compilation of fisher ecology and life history, and it has a significant amount of analysis related to the potential impacts of threats within the SSN DPS's range. In addition, we collected and evaluated new information available since 2016, including new information made available to us during the recent comment periods in 2019, to ensure a thorough analysis, as discussed above. Our analysis as reflected in this rule included our reassessment of the previous information and comments received on the 2014 Proposed Rule regarding the potential impacts to the SSN DPS of fisher, as well as our consideration of new information regarding the past, present, and future threats to the DPS, and the comments and information received during the two comment periods associated with the 2019 Revised Proposed Rule.

The threats that are currently acting on fishers in the SSN DPS are expected to continue into the future (see below), and we find that the SSN DPS is in danger of extinction throughout all of its range. Because it is limited to a single, fragmented population with few individuals and given the threats acting upon it, the current condition of the SSN DPS across the southern Sierra Nevada does not demonstrate resiliency, redundancy, and representation such that persistence into the future is likely.

At this time, the best available information suggests that future resiliency for the SSN DPS of fisher is low. As discussed above in the "Risk Factors for the SSN DPS of Fisher" section (along with some detail in the 2014 draft and 2016 final Species Reports (Service 2014 and 2016, entire)), the SSN DPS faces a variety of threats including: loss and fragmentation of habitat resulting from high-severity wildfire and wildfire suppression, climate change, [redacted], vegetation management, and development; and potential direct impacts to individuals (e.g., increased mortality, decreased reproductive rates, increased stress/hormone levels, alterations in behavioral patterns) from wildfire, increased temperatures, increased tree mortality, disease and predation, exposure to toxicants, vehicle collisions, and potential effects associated with small population size.

Cite the recent habitat losses It's the "smoking gun" indicator of the current major threat.

Currently, fishers in the SSN DPS exist in one small population. The estimate of the SSN DPS is approximately 300 individuals (range = low of 100 to a high of 500 individuals), but there is no statistically detectable trend in population size or growth. Overall, the SSN DPS of fisher exists as a single small population that has persisted but does not appear to be expanding and has experienced recent substantial habitat loss, fragmentation, and reduction in habitat patch size.

We took into consideration all of the threats operating within the range of SSN DPS. This DPS is reduced in size due to historical trapping and past loss of late-successional habitat and, therefore, is more vulnerable to extinction from random events and increases in mortality. In addition, just as threats are not occurring in equal scope and degree across the DPS's range, it is reasonable to conclude that the effects from these threats are occurring more in some areas than others. Some examples of multiple threats on the SSN DPS of fisher include:

- destruction, modification, or curtailment of habitat, which may increase fisher's vulnerability to predation and loss of genetic diversity (Factors A, C, and E);
- impacts associated with climate change, such as increased risk of wildfire and tree mortality (tree insects and disease), and environmental impacts of human development, that will likely interact to cause large-scale changes to habitat distribution and abundance including ecotype conversions away from habitat types used by fisher, which could impact the viability of populations and reduce the likelihood of reestablishing connectivity (Factors A and E);
- increases in tree mortality caused by climate change (Factors A and C); and
- human development, which is likely to cause increases in vehicle collisions (Factors A and E).

Depending on the scope and degree of each of the threats and how they combine cumulatively, these threats can be of particular concern where populations are small and isolated. The cumulative effect (all threats combined) is of concern currently and in the foreseeable future, mainly in areas not managed for retention and recruitment of fisher habitat attributes, areas sensitive to climate change, areas susceptible to large high-severity fires, and areas where direct mortality of fishers reduces their ability to maintain or expand their populations (Service 2014, pp. 166–169). Additionally, although there is currently a wide array of regulatory mechanisms and voluntary conservation measures in place to provide some benefits to the species and its habitat (see "Existing Regulatory Mechanisms and Voluntary Conservation Measures," above), these measures are currently insufficient to ameliorate the threats such that the DPS would not be in danger of extinction, or likely to become so in the foreseeable future. In particular threats related to illegal rodenticide use, increasing high-severity wildfires, and prolonged droughts that exacerbate the effects from wildfire, forest insects, and tree disease are operating at a scale much larger than the current scope of the beneficial actions. Further, the two MOU agreements in California within the range of the SSN DPS for wildfire and fuels management have no specific conservation measures for fisher.

The best available information suggests that identified threats are of concern across the range of the SSN DPS because of the narrow band of habitat that comprises this DPS and its vulnerability to negative impacts associated with small population size. As noted in our analysis, preliminary habitat-based population models suggest that the configuration of habitat affects population numbers in this region, and that some areas with high-quality habitat may remain unoccupied even at equilibrium population sizes, probably due to restricted connectivity between these locations and the main body of the population (Service 2016, p. 44; Rustigian-Romsos 2013, pers. comm.). Therefore, the cumulative impacts related to the habitat-based threats are likely to have a negative effect on the SSN DPS because connectivity would likely decrease further (Service 2016, p. 69).

For the mortality-related threats, we reaffirm our quantitative assessment from 2014 regarding potential cumulative impacts in those portions of the range of the SSN DPS where data were available to do so. Modeling completed for the SSN DPS demonstrates that a 10 to 20 percent increase in mortality rates could prevent fisher populations from the opportunity to expand in the future (Spencer et al. 2011, pp. 10–12). Coupled with an increasing trend in habitat-related threats, the best available information suggests that cumulative effects to the SSN DPS of fisher are reducing its resiliency to such a degree that the DPS is in danger of extinction throughout all of its range. Based on our review of the best scientific and commercial data available, we have determined the SSN DPS of fisher meets the definition of an endangered species under the Act. Per our 2014 draft and 2016 final Species Reports, as well as our most recent analysis summarized herein and based on the comments and information received on the 2019 Revised Proposed Rule, we find the cumulative impact of all identified threats on the SSN DPS, especially habitat loss and fragmentation due to high-severity wildfire (Factor A) and vegetation management (Factor A) (noting that tree mortality from drought, disease, and insect infestation is exacerbated by changing climate conditions and thus also play a role under Factor A), and exposure to toxicants (Factor E), are acting upon the SSN DPS to such a degree that it is in danger of extinction. The existing regulatory mechanisms (Factor D) are not sufficient to address these threats to the level that the species does not meet the definition of an endangered species. We also find that the threat of trapping (Factor B) that was prevalent in the early 1900s is no longer a threat to the SSN DPS of fisher, but the extant population is not expanding geographically even though this threat has been removed.

Determination of Status

Thus, after assessing the best available information, we conclude that the SSN DPS of fisher is currently in danger of extinction throughout all of its range. In reaching this conclusion, we have considered all information received from species experts, partners, the public, and other interested parties, including the variety of available conservation measures and existing regulatory mechanisms that may ameliorate the threats.

Available Conservation Measures

Conservation measures provided to species listed as endangered or threatened species under the Act include recognition, recovery actions, requirements for Federal protection, and prohibitions against certain practices. Recognition through listing results in public awareness and conservation by Federal, State, tribal, and local agencies, private organizations, and individuals. The Act encourages cooperation with the States and other countries and calls for recovery actions to be carried out for listed species. The protection required by Federal agencies and the prohibitions against certain activities are discussed, in part, below.

The primary purpose of the Act is the conservation of endangered and threatened species and the ecosystems upon which they depend. The ultimate goal of such conservation efforts is the recovery of these listed species, so that they no longer need the protective measures of the Act. Subsection 4(f) of the Act calls for the Service to develop and implement recovery plans for the conservation of endangered and threatened species. The recovery planning process involves the identification of actions that are necessary to halt or reverse the species' decline by addressing the threats to its survival and recovery. The goal of this process is to restore listed species to a point where they are secure, self-sustaining, and functioning components of their ecosystems.

Recovery planning includes the development of a recovery outline shortly after a species is listed and preparation of a draft and final recovery plan. The recovery outline guides the immediate implementation of urgent recovery actions and describes the process to be used to develop a recovery plan. Revisions of the plan may be done to address continuing or new threats to the species, as new substantive information becomes available. The recovery plan also identifies recovery criteria for review when a species may be ready for downlisting or delisting, and methods for monitoring recovery progress. Recovery plans also establish a framework for agencies to coordinate their recovery efforts and provide estimates of the cost of implementing recovery tasks. Recovery teams (composed of species experts, Federal and State agencies, nongovernmental organizations, and stakeholders) are often established to develop recovery plans. When completed, the recovery outline, draft recovery plan, and the final recovery plan will be available on our website (http://www.fws.gov/endangered), or from our Yreka Fish and Wildlife Office (see FOR FURTHER INFORMATION CONTACT).

Implementation of recovery actions generally requires the participation of a broad range of partners, including other Federal agencies, States, Tribes, nongovernmental organizations, businesses, and private landowners. Examples of recovery actions include habitat restoration (for example, restoration of native vegetation), research, captive propagation and reintroduction, and outreach and education. The recovery of many listed species cannot be accomplished solely on Federal lands because their range may occur primarily or solely on non-Federal lands. To achieve recovery of these species requires cooperative conservation efforts on private, State, and tribal lands.

Following publication of this final listing rule, funding for recovery actions will be available from a variety of sources, including Federal budgets, State programs, and cost share grants for non-Federal landowners, the academic community, and nongovernmental organizations. In addition, pursuant to section 6 of the Act, the State of California would be eligible for Federal funds to implement management actions that promote the protection or recovery of the SSN DPS of fisher. Information on our grant programs that are available to aid species recovery can be found at: http://www.fws.gov/grants.

Please let us know if you are interested in participating in recovery efforts for this species. Additionally, we invite you to submit any new information on this species whenever it becomes available and any information you may have for recovery planning purposes (see FOR FURTHER INFORMATION CONTACT).

Section 7(a) of the Act requires Federal agencies to evaluate their actions with respect to any species that is proposed or listed as an endangered or threatened species and with respect to its critical habitat, if any is designated. Regulations implementing this interagency cooperation provision of the Act are codified at 50 CFR part 402. Section 7(a)(4) of the Act requires Federal agencies to confer with the Service on any action that is likely to jeopardize the continued existence of a species proposed for listing or result in destruction or adverse modification of proposed critical habitat. If a species is listed subsequently, section 7(a)(2) of the Act requires

Federal agencies to ensure that activities they authorize, fund, or carry out are not likely to jeopardize the continued existence of the species or destroy or adversely modify its critical habitat. If a Federal action may affect a listed species or its critical habitat, the responsible Federal agency must enter into consultation with the Service.

Federal agency actions within the species' habitat that may require conference or consultation or both as described in the preceding paragraph include management and any other landscape-altering activities as well as toxicant use on Federal lands administered by the U.S. Fish and Wildlife Service, U.S. Forest Service, BLM, and National Park Service; issuance of section 404 Clean Water Act permits by the Army Corps of Engineers; and construction and maintenance of roads or highways by the Federal Highway Administration.

It is our policy, as published in the Federal Register on July 1, 1994 (59 FR 34272), to identify to the maximum extent practicable at the time a species is listed, those activities that would or would not constitute a violation of section 9 of the Act. The intent of this policy is to increase public awareness of the effect of a listing on proposed and ongoing activities within the range of the species being listed. The discussion in Section III below about the 4(d) rule complies with our policy.

Critical Habitat

Section 4(a)(3) of the Act, as amended, and implementing regulations (50 CFR 424.12), require that, to the maximum extent prudent and determinable, the Secretary shall designate critical habitat at the time the species is determined to be an endangered or threatened species. In the revised proposed listing rule (84 FR 60278; November 7, 2019), we determined that designation of critical habitat was prudent but not determinable because specific information needed to analyze the impacts of designation was lacking. We are still in the process of assessing this information. We plan to publish a proposed rule to designate critical habitat for the SSN DPS of fisher in the near future.

Summary of Comments and Recommendations

XXX

Required Determinations

National Environmental Policy Act (42 U.S.C. 4321 et seq.)

We have determined that environmental assessments and environmental impact statements, as defined under the authority of the National Environmental Policy Act (NEPA; 42 U.S.C. 4321 et seq.), need not be prepared in connection with listing a species as an endangered or threatened species under the Endangered Species Act. We published a notice outlining our reasons for this determination in the Federal Register on October 25, 1983 (48 FR 49244).

Government-to-Government Relationship with Tribes

In accordance with the President's memorandum of April 29, 1994 (Government-to-Government Relations with Native American Tribal Governments; 59 FR 22951), Executive Order 13175 (Consultation and Coordination With Indian Tribal Governments), and the Department of the Interior's manual at 512 DM 2, we readily acknowledge our responsibility to communicate meaningfully with recognized Federal Tribes on a government-to-government basis. In accordance with Secretarial Order 3206 of June 5, 1997 (American Indian Tribal

Rights, Federal-Tribal Trust Responsibilities, and the Endangered Species Act), we readily acknowledge our responsibilities to work directly with tribes in developing programs for healthy ecosystems, to acknowledge that tribal lands are not subject to the same controls as Federal public lands, to remain sensitive to Indian culture, and to make information available to tribes. In development of the 2014 Species Report, we sent letters noting our intent to conduct a status review and requested information from all tribal entities within the historical range of the West Coast DPS of fisher, and we provided the draft Species Report to those tribes for review. We also notified the tribes via e-mail to ensure they were aware of the January 31, 2019, document in the Federal Register to reopen the comment period on the October 7, 2014, proposed rule to list the DPS as a threatened species. As we move forward in this listing process, we will continue to consult on a government-to-government basis with tribes as necessary.

References Cited

A complete list of references cited in this rulemaking is available on the Internet at http://www.regulations.gov and upon request from the Yreka Fish and Wildlife Office (see **FOR FURTHER INFORMATION CONTACT**).

Authors

The primary authors of this proposed rule are the staff members of the Unified Interior's California-Great Basin Regional Office.

List of Subjects in 50 CFR Part 17

Endangered and threatened species, Exports, Imports, Reporting and recordkeeping requirements, Transportation.

Regulation Promulgation

Accordingly, we amend part 17, subchapter B of chapter I, title 50 of the Code of Federal Regulations, as set forth below:

PART 17—ENDANGERED AND THREATENED WILDLIFE AND PLANTS

1. The authority citation for part 17 continues to read as follows:

Authority: 16 U.S.C. 1361–1407; 1531–1544; and 4201–4245; unless otherwise noted.

2. Amend part 17.11(h) by adding an entry for "Fisher (Southern Sierra Nevada DPS)" in alphabetical order under Mammals to the List of Endangered and Threatened Wildlife to read as follows:

§ 17.11 Endangered and threatened wildlife.

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(h) * * *

Common name	Scientific name	Where Listed	Status	Listing Citations and Applicable Rules
Mammals				
* * * * * * *				
Fisher (Southern Sierra Nevada DPS)	Pekania pennanti	U.S.A. (Southern Sierra Nevada, CA)	T	[Federal Register citation when published as a final rule]; 50 CFR 17.40(s).4d
* * * * * * *				

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* * * * *

Dated: ______________________________________.

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Aurelia Skipwith,

Director, U.S. Fish and Wildlife Service.

~~[Endangered and Threatened Wildlife and Plants; Threatened Species Status for West Coast Distinct Population Segment of Fisher With Section 4(d) Rule]~~