March 1, 2019

Public Comments Processing
Attn: Docket No. FWS-R8-ES-2018-0105
U.S. Fish & Wildlife Headquarters MS: BPHC
5275 Leesburg Pike, Falls Church, VA 22041-3803

The following comments are submitted on behalf of the San Francisco Bay Area Chapter of The Wildlife Society (SF Bay WS), for consideration by the United States Fish and Wildlife Service (USFWS) for the proposed rule to list the West Coast distinct population segment (DPS) of fisher (*Pekania pennanti*) as a threatened species under the federal Endangered Species Act (ESA) (Docket ID: FWS-R8-ES-2018-0105; Federal Register Number 2018-28408). The original comment period was in October 2014; it reopened for comments from January 31, 2019 to May 4, 2019.

The Wildlife Society is an international non-profit science and education association dedicated to excellence in wildlife stewardship through science and education. The Society's mission is to enhance the ability of wildlife professionals to conserve diversity, sustain productivity, and ensure responsible use of wildlife resources for the benefit of society. We work to ensure that wildlife and habitats are conserved through management actions that take into careful consideration relevant scientific information. SF Bay WS appreciates the opportunity to submit the following information for consideration in listing the West Coast DPS fisher.

Introduction

In California, the fisher occupies less than half of its historical range. The two remnant populations are separated by approximately 400 km (Spencer et al. 2011). The Southern Sierra Nevada (SSN) fisher population has been genetically isolated from the Northern California population for thousands of years (Tucker et al. 2012), and is small, potentially including fewer than 300 adult fishers (Spencer et al. 2011). The SSN fisher population stretches from the Merced River in Yosemite National Park to the southern parts of the Sequoia National Forest in central California. Research began on the SSN fisher population in 2007 and has been carried out by the ongoing Kings River Fisher Project, and the Sierra Nevada Adaptive Management Project (SNAMP), later named the Sugar Pine Fisher Project, which ended in 2017.

The following comments address specific questions and information requests that were outlined in the USFWS Federal Register Notice 2018-28408, January 31, 2019. Comments are focused on recent data collected on the SSN fisher population, a small and isolated population at the southernmost extent of the West Coast DPS fisher range.

Information on anticoagulant rodenticides (AR) and other toxicants

- Between 2008 and 2011, 79% of dead fishers collected throughout California had been exposed to toxicants from illegal cannabis grow sites. By 2015, the exposure rate had increased to 85%. More recent data of an additional 22 dead fishers collected since November 2015 shows a 100% toxicant exposure rate (Thompson et al. 2017).
- Anticoagulant rodenticides were the second leading cause of fisher mortality on the SNAMP/Sugar Pine Fisher Projects, accounting for 14% of known fisher deaths. While predation was the primary cause (61%) of mortality, disease also claimed 14% of fisher deaths.

All animals captured after October 2009 tested positive for AR exposure (Purcell et al. 2018; Unpublished, Attachment 1).

- Natural rates of fisher predation are inflated by exposure to toxicants (Thompson et al. 2017), and sublethal toxicant exposures can contribute to limited reproduction rates and increase the probability of dying from minor injuries (Erickson and Urban 2004, Gabriel et al. 2018).

Information on population trend studies

- The population trend of fishers in the SNAMP/Sugar Pine study area (just south of Yosemite National Park), showed a growth rate from 0.90 in 2013 (Sweitzer et al. 2015), to 0.99 in 2016 (Purcell et al. 2018; Attachment 1). Although these data do not indicate a decline, high annual variation in survival rates indicate that this portion of the SSN fisher population is stable, but fragile (Purcell et al. 2018; Attachment 1).
- Recent genetic analyses and survey data indicate that the SNAMP/Sugar Pine fisher population may be the result of a recent northward population expansion (Tucker et al. 2014), and the 2018 discovery of a native, subadult male fisher north of the Merced River in Yosemite National Park supports this theory. Despite these indications of expansion, the fisher population immediately south of Yosemite National Park remains small and is subject to numerous threats such as habitat loss, predation, and toxicant exposure (Purcell et al. 2018; Attachment 1).

Information regarding wildfire, and the response of fishers to post-fire landscapes

- There is a scarcity of information on how fishers respond to large and destructive wildfires; however, long-term studies that outline fisher habitat selection suggest that fishers would not be able to establish home ranges or find suitable structures for denning in areas of high-severity fires (Spencer et al. 2015).
- Thompson and Purcell (2016) found data loggers that were placed Inside SSN fisher dens for the duration of spring season prescribed fires, had logged carbon monoxide levels that would have been potentially hazardous to unborn fetuses and neonates.
- Recent research using scat detection dogs performed three surveys in 2015 and 2016 to locate SSN fisher scat in and around the fire scars of the Aspen (2013) and French (2014) fires. Results showed that the majority of fisher scat was found around the perimeter of the fires, and fisher scat was more likely to be found in areas of lower severity fires or on canyon bottoms. Fisher scat was found deeper within fire areas with increased time post-fire. This indicates that fisher exploration of burned landscapes is a gradual process (Thompson & Purcell, unpublished manuscript).
- Between August and October 2017, the Railroad Fire in the Sierra National Forest burned 12,407 acres of forest, including the Nelder Grove of giant sequoias. The area of the Railroad Fire was nested in the center of the Sugar Pine Fisher Project study area, and large areas of known fisher habitat where destroyed. Data collection for the Sugar Pine Fisher Project ended in 2016.

Information regarding any threats related to small population size and isolation (e.g., low reproductive capacity, inbreeding depression, demographic and environmental stochasticity)

- The size of the SSN fisher population is estimated to be less than 500 total individuals (Spencer et al. 2011). There are an estimated 68 fishers in the Kings River Fisher Project study areas of 650-km^2 (Thompson et al. 2012). There is an estimated population of 48 to 62 individuals in the SNAMP study area of 1300-km^2 (Sweitzer et al. 2015).
- Fisher reproductive parameters at the Kings River Fisher Project showed a mean litter size of 1.57 kits per litter (n = 75 litters), with a mean of 86% of females attempting to reproduce and 75% of females successfully denning (Green et al. 2018). Fisher reproductive parameters at the Sugar Pine Fisher Project found a mean litter size of 1.50 kits per litter (n = 62 litters), with a mean of 78% of females attempting to den and 54% of females successful (Purcell et al. 2018; Attachment 1).
- Available data shows a linear relationship between litter size and latitude, with the lowest mean litter size for the SSN fisher, which is at the southernmost potion of the fisher range (Green et al. 2018).
- High annual variation in demographic rates and small litter sizes indicate that the SSN fisher population is at risk of stochastic events such as disease, inflated exposure to toxicants, and large portions of habitat loss due to tree mortality and wildfires (Purcell et al. 2018; Attachment 1).

Information regarding any effects of ongoing and widespread tree mortality in the Sierra Nevada range

- Large portions of the Sierra National Forest have experienced unprecedented levels of conifer mortality since 2015. The Sugar Pine Fisher Project ended in 2016, preventing collection of data on fisher response to tree mortality, hazard tree removal, and habitat loss due to the Railroad Fire (Purcell et al. 2018; Attachment 1).
- Preliminary results based on GPS data of a male fisher from the Kings Rivers Fisher Project near Shaver Lake, California, shows a pattern of movements that suggest an avoidance of areas with dense tree mortality on the landscape (McGregor & Purcell 2019; Attachment 2).

Information regarding any conservation efforts designed to benefit the fisher that have been planned or implemented since the October 7, 2014, proposed rule

- The Kings River Fisher Project has secured funding for one more year of study, through the end of 2019. It is the aim of this project to attain fine scale GPS movement data for fishers that will assist in understanding impacts of tree mortality on the fisher population, and help researchers and forest managers to plan fuel reduction methods in the Sierra National Forest to preserve fisher habitat.

Thank you for this opportunity to comment on the USFWS proposed rule to list the West Coast DPS of fisher (*Pekania pennanti*), a mustelid species in California, Oregon, and Washington, as a threatened species under the Endangered Species Act (ESA) 16 U.S.C. § 1531 et seq.; 79 Fed. Reg. 60419 (October 7, 2014).

Sincerely,

The San Francisco Bay Wildlife Society

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Enclosures:

- **Attachment 1:**

Purcell, K. L., Thompson, C. M., Roberts, R. A., & Sweitzer, R. A. (2018). Sugar Pine Fisher Project Final Report; a continuation of the Sierra Nevada Adaptive Management Project (SNAMP). Unpublished internal report, USDA Forest Service, Pacific Southwest Research Station.

- **Attachment 2:**

McGregor, E., & Purcell, K. L. (2019). Map: Preliminary GPS Movement Data for a Male Fisher from the Kings River Fisher Project. Unpublished internal map, USDA Forest Service, Pacific Southwest Research Station.

Literature Cited:

Erickson, W. A., & Urban, D. J. (2004). Potential risks of nine rodenticides to birds and nontarget mammals: a comparative approach (p. 225). Washington, DC: US Environmental Protection Agency, Office of Prevention, Pesticides and Toxic Substances.

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Green, R. E., Purcell, K. L., Thompson, C. M., Kelt, D. A., & Wittmer, H. U. (2018). Reproductive parameters of the fisher (*Pekania pennanti*) in the southern Sierra Nevada, California. *Journal of Mammalogy*, 99(3), 537-553.

Spencer, W., Rustigian-Romsos, H., Strittholt, J., Scheller, R., Zielinski, W., & Truex, R. (2011). Using occupancy and population models to assess habitat conservation opportunities for an isolated carnivore population. *Biological conservation*, 144(2), 788-803.

Spencer, W., Sawyer, S. C., Romsos, H. L., Zielinski, W. J., Sweitzer, R. A., Thompson, C. M., ... & Britting, S. A. (2015). Southern Sierra Nevada fisher conservation assessment. Conservation Biology Institute, San Diego, California, USA.

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Sweitzer, R. A., Popescu, V. D., Thompson, C. M., Purcell, K. L., Barrett, R. H., Wengert, G. M., & Woods, L. W. (2016). Mortality risks and limits to population growth of fishers. The *Journal of Wildlife Management*, 80(3), 438-451.

Thompson, C. M., & Purcell, K. L. (2016). Conditions inside fisher dens during prescribed fires; what is the risk posed by spring underburns?. *Forest Ecology and Management*, 359, 156-161.

Thompson, C. M., Gabriel, M. W., & Purcell, K. L. (2017). An ever-changing ecological battlefield: marijuana cultivation and toxicant use in western forests. *The Wildlife Professional*. 11 (3): 42-46, 11(3), 42-46.

Thompson, C. M., Purcell, K. L., Smith, H., Booth, R., & Green, R. E. (2019). Fisher use of post-fire landscapes; implications for habitat restoration. Unpublished manuscript.

Tucker, J. M., Schwartz, M. K., Truex, R. L., Pilgrim, K. L., & Allendorf, F. W. (2012). Historical and contemporary DNA indicate fisher decline and isolation occurred prior to the European settlement of California. *PloS one*, 7(12), e52803.5.

Tucker, J. M., Schwartz, M. K., Truex, R. L., Wisely, S. M., & Allendorf, F. W. (2014). Sampling affects the detection of genetic subdivision and conservation implications for fisher in the Sierra Nevada. *Conservation Genetics*, 15(1), 123-136.