

CENTER FOR BIOLOGICAL)	
DIVERSITY, <i>et al.</i> ,)	No. 3:16-cv-06040-WHA
)	
Plaintiffs,)	FEDERAL DEFENDANTS' AND
)	DEFENDANT INTERVENORS' JOINT
v.)	MEMORANDUM REGARDING
)	SUPPLEMENTAL HEARING ON THE
UNITED STATES FISH AND)	PARTIES' CROSS-MOTIONS FOR
WILDLIFE SERVICE, <i>et al.</i> ,)	SUMMARY JUDGMENT
)	
Defendants,)	Hearing: August 22, 2018
)	Time: 8:00 a.m.
AMERICAN FOREST RESOURCE)	Judge: Hon. William H. Alsup
COUNCIL, <i>et al.</i> ,)	Place: Courtroom 12
)	
Defendant-Intervenors.)	

1 Federal Defendants and Defendant Intervenors, by and through undersigned counsel,
 2 hereby submit the following memorandum explaining the significance of the numbered passages
 3 in the parties' joint booklet of the eight most pertinent scientific studies referenced in the United
 4 States Fish and Wildlife Service's ("Service") decision to withdraw the proposed listing of the
 5 West Coast distinct population segment ("DPS") of fisher (hereinafter referred to as the "fisher")
 6 as a "threatened species" under the Endangered Species Act ("ESA"), 16 U.S.C. § 1531 *et seq.*
 7 81 Fed. Reg. 22,710 (Apr. 18, 2016) (hereinafter referred to as the "final listing determination").¹
 8 In accordance with the Court's July 25, 2018 Order Setting Supplemental Hearing (Dkt. 72), the
 9 memorandum is organized in numerical order.

10 **A. Final Listing Determination²**

11 **D 1-1, 1-2, 1-3, 1-7, 1-23:** At the time of the proposed rule the Service was uncertain about
 12 toxicants and cumulative effects, but considered these stressors along with wildfire, vegetation
 13 management and small population size and isolation to be acting negatively on fisher populations.
 14 After considering the best available scientific and commercial information, including public and
 15 peer review comments received, the Service concluded that the previously identified stressors
 16 were not as significant as previously thought, that the fisher is not responding negatively to the

17
 18 ¹ Although the Court ordered the parties to identify and submit the eight most pertinent scientific
 19 studies referenced in the final listing determination, the administrative record in this case contains
 20 significantly more than eight studies. The appropriate inquiry for courts in Administrative
 21 Procedure Act ("APA") cases is whether the agency's decision is supported by the record as a
 22 whole, which includes everything before the agency pertaining to the merits of its decision.
 23 *Portland Audubon Soc. v. Endangered Species Comm.*, 984 F.2d 1534, 1548 (9th Cir. 1993). This
 24 standard is "highly deferential" and requires a reviewing court to consider only "whether the
 25 decision was based on a consideration of the relevant factors and whether there has been a clear
 error of judgment." *San Luis & Delta-Mendota Water Auth. v. Jewell*, 747 F.3d 581, 601 (9th Cir.
 2014) (quoting *Citizens to Pres. Overton Park v. Volpe*, 401 U.S. 402, 416 (1971)). Likewise,
 under the ESA's best available data requirement, an agency cannot ignore available biological
 information. *Jewell*, 747 F.3d at 601-02. Accordingly, the Service's decision is based on the
 scientific information in the entire record, as lodged on July 31, 2018. Dkt. 45.

26 ² The final listing determination is the culmination of the Service's rulemaking process and sets
 forth the agency's rationale for its conclusions, unlike the underlying studies submitted to the
 27 Court, which provide only facts. 16 U.S.C. § 1533(b)(3)(B)(ii). Accordingly, this section of the
 memorandum includes case citations, which track the briefing previously submitted by Federal
 28 Defendants and Defendant Intervenors. *See* Dkts. 57, 58, 62, 64.

1 stressors to which they are exposed at either a population or rangewide scale, nor are they likely
 2 to do so in the foreseeable future. Thus, the fisher does not meet the definition of a threatened or
 3 endangered species. As the expert agency charged by Congress with making listing
 4 determinations, the task before the Service under the ESA is to demonstrate that it “considered
 5 the relevant factors and articulated a rational connection between the facts found and the choices
 6 made.” *Alaska Oil & Gas Ass’n v. Pritzker*, 840 F.3d 671, 683-84 (9th Cir. 2016) (citation
 7 omitted), *cert. denied*, 138 S. Ct. 924 (2018).

8 **D 1-4, 1-6, 1-19:** Population trend information for the Northern California Southern Oregon
 9 (“NCSO”) population shows a growth rate for females of slightly higher than 1.0 (*see* Higley
 10 2014, AR 012919-034) and slightly less than 1.0 for males from 2005-2012 in the Hoopa study
 11 area and a population growth rate of 1.06 for the Eastern Klamath Study area for the period of
 12 2006-2013 (*see* Powell 2014 AR 020292-333), which indicates a stable population within the
 13 study area. Population trend information for the Southern Sierra Nevada (“SSN”) population
 14 estimates shows an estimated population growth rate of 0.97 (*see* Sweitzer 2015a AR024639-57).
 15 However, the study authors state the population may not be in persistent decline but is offset by
 16 periods of stability or growth, suggesting a basically stable trend. Finding no better evidence in
 17 the record regarding population trends, these studies are the best available science. *Kern Cty.*
 18 *Farm Bureau v. Allen*, 450 F.3d 1072, 1080 (9th Cir. 2006). Although the population studies are
 19 representative of only a portion of the fisher populations, the best available science requirement
 20 in the ESA requires the Service to consider these studies in making their listing determination.
 21 *Sw. Ctr. for Biological Diversity v. Babbitt*, 215 F.3d 58, 60 (D.C. Cir. 2000); *see also Jewell*,
 22 747 F.3d at 602 (the Service “cannot ignore available biological information”) (citation omitted).

23 **D 1-7, 1-8, 1-9:** The Service identified wildfire and fire suppression, vegetation management, and
 24 exposure to toxicants as the stressors of highest current and future scope and magnitude. The
 25 Service in reaching its final listing determination did not discount the impacts that the identified
 26 stressors have on individual fishers and their habitat or that these stressors are expected to
 27 continue in the future such that monitoring the biological status of the fisher populations should
 28 continue. Nevertheless, these stressors are not impacting fishers such that the species meets the

1 statutory definition of either threatened or endangered and the species is expected to persist into
2 the future. The Service's consideration of whether the identified stressors are impacting fisher
3 populations such that the species meets the statutory definition of threatened or endangered
4 accords with the law of this circuit – that there must be at least a “causal link” between a stressor
5 and the species' continued survival. *Pritzker*, 840 F.3d at 683.

6 **D 1-10, 1-11:** Based on the Service's evaluation of information available after issuance of the
7 proposed rule, the Service updated the final Species Report to address, among other things, the
8 beneficial effects of wildfire on creation and maintenance of habitat for fishers. The potential
9 beneficial effects included the contribution of high-severity fires to the regeneration of hardwood
10 components of mixed-conifer forests used by fishers, the resiliency of forests to recurrent, severe
11 fires; and fisher use of burned landscapes. The Service provided a rationale as to why it no longer
12 considered wildlife and fire suppression to be threats. The Service's conclusion is supported by
13 its qualitative evaluation of past and continued predicted impacts of wildfire, the beneficial and
14 negative impacts of wildfire; fuels reductions programs; the presence of suitable but unoccupied
15 habitat throughout the west coast states; the expectation that forest ingrowth should provide
16 suitable habitat to offset some future wildfire impacts; and benefits that will be provided by future
17 low- or mixed-severity wildfires. The final determination provided a comprehensive and
18 thoroughly supported explanation as to why it reached a different conclusion in the final listing
19 determination. *See Sierra Club v. Bureau of Land Mgmt.*, 786 F.3d 1219, 1226 (9th Cir. 2015).

20 **D 1-12:** Climate change is not currently or expected in the foreseeable future to result in
21 significant habitat loss or range contractions at either the population or rangewide scale.
22 Predictions regarding future habitat suitability for fishers in response to climate change are not
23 consistent. For example, there may be a loss of fisher habitat as forests are converted to woodlands
24 or grasslands, but other studies suggest that fisher may experience an overall net gain of suitable
25 habitat in response to climate change. The Service also found that suitable but unoccupied habitat
26 would be available to help offset any potential foreseeable future impacts to fisher habitat. While
27 fishers may be sensitive to warming summer temperatures, the Service found it likely that fishers
28 would alter their use of microhabitats or shift their range to avoid thermal stress.

D 1-13, 1-14, 1-15, 1-17: Only 15 mortalities of fishers have been directly attributed to anticoagulant rodenticide exposure in the NCSO and SSN populations of California. *See also*, Gabriel et al. 2015 (AR 010940). The best available information reveals little regarding the extent of AR exposure throughout the DPS, as no rangewide studies have evaluated population-level impacts of AR exposure across the DPS range. Accordingly, the best available evidence does not suggest a declining fisher population or that toxicant exposure is causing significant impacts at either the population or rangewide scale. Moreover, the best available information does not demonstrate significant deleterious sublethal effects in fishers at the population or rangewide scale. The Service considered the available evidence indicating that, even if exposure was widespread, there were very few cases of documented mortality and no evidence of population level declines. Other courts in this district have found such a rationale “persuasive.” *See Ctr. for Biological Diversity v. U.S. Fish & Wildlife Serv.*, 246 F. Supp. 3d 1272, 1286 (N.D. Cal. 2017). As one peer reviewer explained in commenting on the proposed rule, “it seems a bit speculative to consider [toxicant exposure] an overall threat to fisher populations...[t]he scope of the threat is based on numerous assumptions (density of marijuana growing operations, whether each operation uses [anticoagulant rodenticides], etc.) and there are many unknown variables.” AR179253.

D 1-16: No consistent trends associate residue concentrations with levels at which adverse effects occur. *See* Erickson and Urban 2004 (AR 009680). Thus, what level of toxicant exposure causes adverse effects in fishers is unknown. The Service cannot speculate about the effects of toxicants on fisher populations in the absence of information. *Bennett v. Spear*, 520 U.S. 154, 176 (1997).

D 1-18, 1-20, 1-22: The separation of the SSN and NCSO populations occurred a very long time ago, likely pre-European settlement, and thus the populations have persisted in this isolation over a long period of time. *See also*, D 1-5. There is some evidence of interchange beginning to occur between the NCSO and reintroduced NSN and SOC populations. Moreover, population trend data demonstrate that there is no information to suggest either positive or negative trends resulting from the identified stressors acting on the small populations. That is, there is no data indicating that the stressors are operating as threats to the species. Some perceived stressors, such as wildfire,

1 may also have benefits (*e.g.*, habitat creation). Finally, although the populations are considered
 2 small, small population size alone is not a threat to the species, in part because of the overlap
 3 between the NCSO and other reintroduced populations and the lack of a discernable negative
 4 population trend for any of the populations. For these reasons, the Service concluded that the best
 5 available evidence does not suggest that any of the populations within the DPS are likely to be
 6 permanently lost as a result of identified stressors in the foreseeable future. Plaintiffs' difference
 7 of opinion about the evidence before the agency does not warrant a contrary conclusion. *Lands*
 8 *Council v. McNair*, 537 F.3d 981, 988 (9th Cir. 2008).

9 **D 1-21:** There are multiple, interacting fisher populations across a broad geographic area and thus
 10 there is sufficient redundancy to sustain fishers in the west coast states over the long term. Current
 11 and future reintroductions are likely to strengthen the degree of redundancy into the future. Thus,
 12 the Service concluded that there is no information to suggest that it is likely that one of these
 13 populations will be lost in the foreseeable future. Determining whether a species is likely to
 14 become endangered in the foreseeable future requires a great deal of predictive judgment, which
 15 is entitled to deference. *Trout Unlimited v. Lohn*, 559 F.3d 946, 959 (9th Cir. 2009).

16 **D 1-24:** The Service concluded that stressors are not having significant impacts at the population
 17 scale in any portion of the proposed DPS's range, nor is the fisher exhibiting population declines
 18 in any portion of its range. Thus, there was no need to evaluate further whether the species meets
 19 the definition of an endangered or threatened species throughout a significant portion of its range.

20 **D 1-25, 1-26, 1-27, 1-28:** These paragraphs reflect the Service's responses to peer review
 21 comments regarding the effect of wildfire on fisher habitat, particularly that the Service's draft
 22 Species Report had overemphasized the negative aspect of fire without discussing the benefits of
 23 fire. Likewise, a peer reviewer noted that the historic fire regime in the Sierra mixed-conifer forest
 24 was likely mixed-severity, with high-severity fires occurring at moderate to long intervals, and
 25 that this fire regime is largely responsible for producing the heterogeneous forests that are favored
 26 by fisher.

27 **B. Scientific Studies Jointly Provided by the Parties**

Baker, W.L. 2014³

D 4-1, 4-2, 4-5: High-severity fires were a natural and necessary component of Sierran mixed-conifer forest. Forests that historically and currently provide fisher habitat include areas where high-severity fires were historically relatively extensive (occurred over more than 30 percent of the landscape).

D 4-6: High severity fires historically could burn large contiguous patches, often exceeding 250 hectares and reaching as high as 9,400 hectares.

D 4-7: A mix of fire severities, including extensive historical mixed- and high-severity fire, characterized much of the historical dry forest in the western United States, including the western Sierra Nevada.

D 4-8, 4-9: The historic fire regime and topography created a heterogeneous forest structure that promoted forest resilience and had many ecological benefits, such as helping to create a diverse and dense forest structure used by wildlife.

D 4-10, 4-11: The dominant fire regime (i.e., mixed-severity fires, which may include high-severity fires as a component) created habitat with tree regeneration and abundant shrub cover, dead snags and other important wildlife habitat elements. Mixed-severity fire regimes are responsible for creating and maintaining Sierra mixed-conifer forests.

D 4-12: Wildlife in the Sierra Nevada have adapted to the fire regime so that they can survive in the burned environment and in the habitat that develops between fires.

Donato, DC., J.B. Fontaine, W.D. Robinson, J.B. Couffman, and B.F. Law. 2009⁴

D 5-1: Short interval severe fires (“SI”) have likely been a component of the complex fire regime and a factor structuring vegetation in the region.

D 5-2, 5-3: SI fires result in vegetative communities associated with mature/old growth forests, with no decline in diversity or abundance. Major structural species (conifers and hardwood) regenerate after SI fires and may develop into mature forests absent repeated severe fires.

³ See D 1-10, D 11-9, D 11-13 and D 11-14 for the Service’s citations to this study.

⁴ See D 1-10, D 11-14, and D 11-22 for the Service’s citations to this study.

D 5-4, 5-5: The consistent presence of a diversity of species suggests there is high community resilience following one or two stand-replacing fires. Native biota is resilient to extreme events such as recurrent severe fire and SI fires have historically been a component of the fire regime.

Erickson, W., and D. Urban. 2004⁵

D 6-1: This study assessed potential risks to birds and nontarget mammals from nine rodenticides, concluding that the liver concentration that might corroborate death or other adverse effects from anticoagulant exposure is uncertain, and it may not be appropriate to consider a cause-effect relationship between liver concentration and death or adverse effects. Further, the relationship between toxicant concentration found in exposed fishers and the rate of mortality or illness is currently unknown. Based on this study, the Service reported that no consistent trends associate residue concentrations with levels at which adverse effects occur.

Gabriel, et al., 2015⁶

D 7-1, 7-2, 7-3: Predation was overwhelmingly the highest contributing source of mortality for fishers in a study of mortality of fishers collected from the Southern Sierra Nevada and Northern California populations of fishers during 2007-2014 (70%, or 90 fishers) followed by disease (16% or 21 fishers). By contrast, poisoning was the source of mortality for 13 (10%) fishers, with anticoagulant rodenticides confirmed in the deaths of 11.

Higley, et al., 2014⁷

D 8-1, 8-2, 8-3, 8-4, 8-5: The study concluded that the lambda (population growth rate (D 1-4, AR 000718/153827) estimates indicate that “the population as a whole is essentially stable” with males possibly decreasing (0.912) and females possibly increasing (1.038). Total capture mark recapture annual population estimates trended upwards with the population of fishers in the Hoopa study area increasing overall and the population density increasing to over half what it was in 1998.

⁵ See D 1-16, D 11-32, and D 11-37 for the Service’s citations to this study.

⁶ See D 1-16, D 11-32, and D 11-37 for the Service’s citations to this study.

⁷ See D 1-4, D 1-19, and D 11-4 for the Service’s citations to this study.

Powell, et al., 2014⁸

D 9-1, 9-2: Population growth rate in the Klamath study area was estimated to be 1.06 (0.97 – 1.15), suggesting a stable or slightly growing population, which is consistent with a recruitment rate (0.45) slightly higher than the mortality rate ($1 - 0.60 = 0.40$). Estimates of demographic variables suggest that the population of fishers in this study area is stable despite the removal of approximately 10% of the population each year for reintroduction in other areas.

Sweitzer, et al., 2015a⁹

D 10-1, 10-2, 10-4: Estimates for survival and reproduction suggest that the fisher population in the Bass Lake Ranger District, Sierra National Forest (Oct. 2008 – June 2013) is not in persistent decline, given the high upper range confidence interval estimate well above 1.0 ($\lambda = 0.966$, 95% confidence interval range = 0.786 – 1.155). (*See also*, AR 024651 (Sweitzer noting that the growth rate model had upper range well above 1.0 “suggesting stability or growth in some years. The estimated range for [population growth rate] was consistent with the estimated population densities, which did not indicate a persistent decline during 4 years from 2008-2009 to 2011-2012”)).

D 10-3, 10-5: Of the three studies to analyze population growth rates of fisher populations in the DPS, all three have confidence intervals that bound 1.0 and therefore do not indicate either a significant positive or negative trend. Because the upper range of λ extended well above 1.0, Sweitzer 2015a concluded that the population was not necessarily in persistent decline.

Final Species Report Fisher (*Pekania pennanti*), West Coast Population

D 11-1, 11-6: The Final Species Report demonstrates that the Service comprehensively analyzed population size and trends. Studies of fisher populations have varied, some observing stable densities while others have recorded substantial changes. For the Eastern Klamath Study Area in northern California and southern Oregon, Swiers 2013 estimated a stable annual population ranging from 29 to 35 individuals from 2007 to 2011 (estimated population growth rate of 1.06)

⁸ See D 1-4, D 1-19, and D 11-5 for the Service’s citations to this study.

⁹ See D 1-6 and D 1-19 for the Service’s citations to this study.

(see AR 024837-91). Matthews et al (2011) reported a population decline between 1998 and 2005 on the Hoopa Valley Indian Reservation. (AR 016883-89). However, this decrease may have been a localized decrease in what was a temporarily dense population Higley and Matthews (2009) observed a growth rate of 1.03-1.12 in the Hoopa study area, indicating that the population is showing signs of stability. (AR 012713-012804). In 2013, Sweitzer estimated a population growth rate in the Sierra Nevada Adaptive Management Project study area to be 1.1 (95% confidence interval 1.04-1.19), which indicates a stable or slightly increasing population. (AR 038192).

D 11-2: New information since 2014 indicates that the NCSO fisher population appears to be expanding its range.

D 11-3, 11-4, 11-5: Population trend information for the NCSO population indicates a possible increasing population rate for females in the Hoopa study area (see Higley 2014 AR 012919-034) and a stable or slightly increasing population in the eastern Klamath study area (see Powell 2014 AR 020292-333). See also, AR 012744 (Hoopa study) (“The increasing [population trend] estimate and the shift in age structure towards a slightly higher proportion of adult animals coupled with an increasing female to male ratio all indicate that the population is showing signs of stability or increase”).

D 11-9: New information since 2014 suggests that high severity fires were historically extensive and may have covered more than 30% of Sierra Nevada forests. Mixed severity fires were the dominant fire class (43% in the south; 48% in the north).

D 11-10, 11-11, 11-12, 11-22: The consequences of fire on habitat are complex and not subject to generalization. Fires can have mixed effects on habitat, reducing or removing important elements of fisher habitat, but fires can also create or maintain structural elements used by fisher. As commented upon by several peer reviewers, the proposed rule had emphasized the negative effects of fire; the final Species Report also discusses new information concerning potential benefits of wildlife. See, e.g., AR 179247; AR 179183. For example, low- or mixed-severity fire may play an integral role in maintaining mixed conifer-hardwood forest suitable for fisher. Mixed-severity fires can contribute to the regeneration of the hardwood component of mixed conifer forests used by fishers and may also lead to an increase in the abundance of prey species.

1 Low-severity fires can create or maintain reproductive habitat for fishers, as fire scars enhance
2 the formation of cavities that serve as denning site.

3 **D 11-13, 11-14:** New information available since 2014 suggests that fires can promote the
4 development of fisher habitat. In the Sierra mixed conifer forest, a historical fire regime
5 characterized by mixed-severity fires, with high-severity fires occurring at moderate to long
6 intervals, is believed to have produced forest with habitat characteristics favored by fishers.
7 Forests characterized by highly variable natural disturbances, such as mixed-severity fire regimes,
8 are relatively resilient to recurrent severe fire. Vegetative diversity remains after severe, short
9 interval fires and mixed-severity fires promote vigorous regeneration of mixed conifer forests. In
10 the Sierra Nevada, historical mixed-conifer forests were dominated by relatively younger and
11 smaller trees, such as those that may follow after fires.

12 **D 11-15, 11-16:** Fishers evolved in forests that were subject to wildfire and fishers' ability to use
13 the landscape depends on the size and severity of the fire.

14 **D 11-17, 11-18, 11-19, 11-20:** New information available since 2014 indicates that fishers have
15 been found to use post-fire landscapes, possibly for foraging as prey availability increases. High-
16 severity fire is not necessarily at odds with fisher conservation. Surveys in Shasta County,
17 California suggest fisher use of burned area following high-severity fire, salvage logging, and
18 replanting, as fishers may make use of previously burned forest for at least dispersal and foraging.
19 Forest vegetation 5-10 years post fire produces suitable conditions for fisher prey. Fire does not
20 produce a consistent negative effect on fisher habitat use, but additional research is needed to
21 conclude, however, that fire is not damaging foraging and denning habitat used by fishers in the
22 southern Sierra Nevada.

23 **D 11-20:** Female fishers may den in five or more den sites throughout a season, which may make
24 them more resilient to fire.

25 **D 11-21:** There is some debate over whether severity of fires is increasing in the Sierra Nevada.

26 **D 11-23:** In sum, wildfire is a natural ecological process that occurs with varying frequency and
27 intensity throughout the fisher's range. There are some indications that wildfire may be
28 increasing, but whether fires may be increasing in severity is subject to continuing debate. Studies

1 on the effects of wildfire on fisher, although limited, demonstrate a variety of both positive and
2 negative consequences, depending on the size, severity and landscape position of the fire. The
3 degree to which fire may affect fisher populations is unknown, but all indications are that the
4 population response would be specific to the landscape location, size, and intensity of the fire.
5 Within the analysis area, there are areas of suitable but unoccupied habitat which may or may not
6 be accessible by extant fisher populations due to location.

7 **D 11-24, 11-25:** New information available since 2014 predicts climate change effects that will
8 increase fisher habitat. A shift in climate that results in lower snowpack may assist the dispersal
9 of juvenile fishers, since they disperse in winter and snowpack may be limiting. Predicted
10 increases in precipitation and modulation of cold winter temperatures will result in greater areas
11 of wet, maritime-like forests and lower snowpack that fisher appear to prefer and that fisher may
12 therefore benefit from climate warming.

13 **D 11-26, 11-27, 11-28:** Studies specific to predicting the effects of climate change on suitable
14 fisher habitat have produced conflicting results. Some studies suggest that fishers may experience
15 an overall net gain of suitable habitat in response to climate change, due, for example, to reduced
16 snowpack. Predictions regarding future habitat suitability for fishers in response to climate
17 change and the likely specific response of the species to these predicted changes remain uncertain.
18 There is not agreement as to when and how changes to habitat will occur or how fishers will
19 respond to these changes. The available scientific information does not allow the Service to draw
20 any reliable conclusions with regard to the future availability of the specific habitat elements and
21 conditions required to sustain fishers within the analysis area. The best scientific and commercial
22 data available at this time do not indicate that any population- or rangewide-level impacts to fisher
23 are occurring now as a consequence of climate change, or are likely to be realized within the
24 foreseeable future.

25 **D 11-29, 11-30:** Information in the record suggests that the SSN and NCSO populations of fisher
26 have been separated for a long time, likely more than 1,000 years. The Service considers the SSN
27 population to be isolated and small, but with unoccupied suitable habitat available. The NCSO
28 population has greater availability of suitable habitat and documented ability to migrate between

1 populations (as recently recorded between the native NCSO population and reintroduced SOC
2 population). These populations are expected to remain small, as has been apparent since pre-
3 European settlement.

4 **D 11-31, 11-32:** New information available since 2014 indicates the total mortality of fishers in
5 California from exposure to toxicants is 15. Correlations between residue level and mortality or
6 symptoms of poisoning have not identified consistent trends, despite numerous studies.

7 **D 11-33:** The relationship between anticoagulant rodenticide concentration found in exposed
8 fishers and the rate of mortality or illness is currently unknown. There is no clear indication of a
9 numeric threshold that might indicate an anticoagulant rodenticide quantity leading to illness or
10 mortality.

11 **D 11-34:** As of 2012, anticoagulant rodenticide exposure was determined as the direct cause of
12 death for 4 out of 58 fisher mortalities in California (cause of death for the other 54 fishers were
13 predation, disease, and vehicular strikes). The degree to which exposure of fishers to
14 anticoagulant rodenticide increases the probability of mortality from these other causes is not
15 known.

16 **D 11-35, 11-36:** Empirical estimates of population growth rates within the analysis areas are very
17 close to 1. Native and reintroduced populations within the analysis area are relatively small and
18 isolated, increasing the vulnerability of these populations to stochastic changes in survival and
19 reproductive rates. If fisher mortality increases due to the stressors, stochastic fluctuations in
20 demographic parameters have the potential to cause sudden, sharp declines in the populations.
21 But, there is currently no evidence that stressors are causing population declines.

22 **D 11-37:** Toxicant exposure in the two populations of California fishers appears to be widespread,
23 but no consistent trend has been identified between toxicant exposure level and adverse effects.
24 There are no population or rangewide studies to evaluate the population level impacts on fisher
25 within the DPS.

26
27 Respectfully submitted this 17th day of August, 2018,
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CERTIFICATE OF SERVICE

I hereby certify that, this 17th day of August, 2018, I electronically filed the foregoing documents with the Clerk of the Court via CM/ECF system, which will send notification of such to the attorneys of record.

/s/ Nicole M. Smith

NICOLE M. SMITH