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Public Comments Processing
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Re: U.S. Fish and Wildlife Service's proposed rule to list a distinct population segment of the North American wolverine in the contiguous United States as a threatened species under the Endangered Species Act.

Thank you for providing this opportunity to comment on the U.S. Fish and Wildlife Service's (Service's) proposed rule to list a distinct population segment (DPS) of wolverine occurring in the contiguous United States as a threatened species under the Endangered Species Act (ESA), 16 U.S.C. § 1531 et seq.

These comments are submitted by the Western Environmental Law Center (WELC) on behalf of the Lands Council, Montana Ecosystem Defense Council, Klamath-Siskiyou Wildlands Center, George Wuerthner, Hunters for Predators, WildEarth Guardians, Native Ecosystems Council, Western Wildlife Conservancy, Selkirk Conservation Alliance, Alliance for the Wild Rockies, Kootenai Environmental Alliance, Wildlands CPR, WildWest Institute, Friends of the Wild Swan, Footloose Montana, the National Parks Conservation Association (NPCA), Hells Canyon Preservation Council, Swan View Coalition, Cascadia Wildlands, Gifford Pinchot Task Force, Oregon Wild, Helena Hunters and Anglers Association, Friends of the Bitterroot, Cabinet Resource Group, Wildlands Network, and Conservation Northwest.

Each of these organizations is committed to ensuring the long-term survival and recovery of wolverine in the contiguous United States. These comments, which supplement individual comments that may be submitted by each organization, are submitted in furtherance of that commitment and to ensure the Service bases its final decision on the best available science. A complete copy of all scientific papers cited in these comments is provided on compact disc (submitted herein).

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1. The DPS Qualifies For Endangered Status.

The best scientific and commercial data available reveals the wolverine DPS in the contiguous United States (hereinafter “the DPS”) qualifies for endangered status under the ESA.

The term endangered species means any species which is “in danger of extinction throughout all or a significant portion of its range . . .” 16 U.S.C. § 1532(6); 50 C.F.R. § 424.02(e). Because the ESA does not define the word significant, courts have utilized the dictionary definition which was found to be consistent with the statute’s purpose: “a noticeably or measurably large amount.” *DOW v. Kempthorne*, 2006 WL 2844232, *5 (D.D.C. 2006). In *DOW v. Norton*, 258 F.3d 1136 (9th Cir. 2001), the Ninth Circuit interpreted the phrase to mean that a “species could be extinct throughout a significant portion of its range if there are major geographical areas in which it is no longer viable but once was.” *Norton*, 258 F.3d at 1145 (emphasis added). “Those areas need not coincide with national or state political boundaries, although they can.” *Id.*

In the proposed rule, the Service concludes that the DPS only qualifies for threatened, not endangered status. According to the Service, wolverine in the contiguous United States will likely become endangered in the foreseeable future due to loss of habitat and increased habitat fragmentation from climate change: “In the future, wolverine habitat is likely to be reduced to the point that the wolverine in the contiguous United States is in danger of extinction.” 78 Fed. Reg. at 7865. But until then, wolverines do not qualify for endangered status due to the lack of “immediacy, severity, and scope of the threats” facing wolverine. This is incorrect.

Specifically, the Service’s determination that the DPS does not qualify for endangered status: (1) is inconsistent with the best available science which reveals that the DPS is presently in danger of extinction throughout all or a significant portion of its range; (2) assumes the major threat facing the DPS (climate change) is not presently occurring or imminent; and (3) fails to take into account that there are no meaningful plans to address or reduce the effects of climate change or change its course over the next twenty years.

a. The best science.

First, the best available science reveals the DPS is presently in danger of extinction throughout all or a significant portion of its range, as that term is defined in the ESA and interpreted by the courts.

According to the Service’s estimates, the total population of wolverine inhabiting the contiguous United States is no more than approximately 250 to 300 individuals. The Service’s estimate (by state) is as follows: 175 in Montana; 75 in Idaho; 15 in Wyoming;

1 in Colorado; 10 in Washington; 5 in Oregon; and 1 in California. This population estimate is based solely on a personal communication. *See* 78 Fed. Reg. at 7868. There are no peer-reviewed papers or studies estimating the total population of the DPS. And, the 250-300 number is derived primarily from the amount of modeled wolverine habitat that exists in the contiguous United States (in the absence of field surveys) which, according to the best science, is not the most reliable or appropriate method for predicting wolverine numbers. Squires et al. (2007), for instance, expressly warns against estimating wolverine abundance based on available habitat assumed densities, without actual field surveys.

This means the total population of the DPS – which is the listable entity – could be much smaller, perhaps less than 200 individuals. Or, there could be more. The point is the Service is unsure how many wolverines inhabit the contiguous United States. And, as the Service concedes, this DPS is divided into various partially or completely isolated small subpopulations (e.g., Cascades, Crazy Mountains, mountain ranges in southwestern Montana) and apparently isolated from the Canadian populations. *See* 78 Fed. Reg. at 7876 (discussing isolation of various subpopulations); at 7885 (discussing lack of connectivity between Canadian and contiguous United States population). This wolverine population also has rates of successful reproduction that are “among the lowest known for mammals.” *Id.* at 7866; *see also* Anderson and Aune (2008) (rate of female wolverine reproduction among lowest reported in the literature).

Using the Service’s best-guess estimate of 250 - 300 total individuals in the entire contiguous United States and taking into account the uncertainties in the population estimate, the on-going declines in numbers resulting from climate change, the isolated subpopulations and disconnect with wolverines in Canada, and extremely low reproduction rates, the DPS qualifies as “endangered.”

Under the International Union for Conservation of Nature’s (IUCN’s) definitions, for instance, the DPS qualifies as “endangered” and even “critically endangered” based the existing population numbers. Under the IUCN’s criteria, a species is deemed “critically endangered” and facing an extremely high risk of extinction in the wild if the population size estimate is fewer than 250 mature individuals and there is a predicted, continuing decline in the numbers with no subpopulation containing more than 50 mature individuals. *See* IUCN Red List Categories and Criteria at 17-18 (Version 3.1, Second Edition)(http://www.iucnredlist.org/documents/redlist_cats_crit_en.pdf). The DPS meets this criteria for a “critically endangered” species. And, an even stronger argument can be made that wolverine qualify for “endangered” status pursuant to the IUCN’s definition. *See id.* at 18-20.

Indeed, similar to the DPS, the Service has concluded that other species warrant listing as endangered based on the isolation, small numbers, and low reproductive rates of the DPS, just like wolverines in this case. *See e.g.*, 64 Fed. Reg. 26725, 26732 (May 17,

1999) (finding that small isolated population of grizzly bears in Cabinet-Yaak ecosystem warrants endangered listing status).

Notably, in the proposed rule, the Service anticipates a loss of 63% of the wolverine habitat in the contiguous United States by the time interval centered on year 2085. 78 Fed. Reg. at 7876 (citing McKelvey et al. (2011)). This loss in habitat “is likely to result in a loss of wolverine numbers that is greater than the overall loss of habitat area.” 78 Fed. Reg. at 7876 (emphasis added). This means that greater than 63% of the wolverine we now have in the contiguous United States will be gone in the foreseeable future.

Thus, even if one accepts the Service’s population estimate of 250-300 individuals and accepts the Service’s theory that this small population is not currently endangered (it is), a foreseeable population of 63% fewer wolverines certainly is (see below). Moreover, global greenhouse gas (GHG) emissions have already outstripped the worst case scenarios on which McKelvey et al.’s (2011) projection of 63% reduction in habitat was based. *See* Seth Borenstein, AP, *Biggest Jump Ever Seen in Global Warming Gases* (Nov. 3, 2011) (global emissions exceeded worst case scenario of 2007 report from the Intergovernmental Panel on Climate Change); *accord* U.S. Global Change Research Program, Draft Climate Assessment 6 (2013) (“[G]lobal emissions are still rising and are on track to be even higher than the high emissions scenario (A2) analyzed in this report.”). This means that the warmest model used by McKelvey et al. (2011) -- miroc 3.2 -- which projected nearly 90% reduction in habitat by the end of the century may be the more accurate projection. *See* McKelvey et al. (2011) at 2888-89.

In the proposed rule, the Service maintains that wolverine population levels in the Northern Rockies and North Cascades, where the species currently exists, “may not be substantially lower than the population densities were in these areas prior to European settlement” but no citation or authority is provided to support this statement. Under the Service’s theory, the entire Northern Rockies and North Cascades region would only be capable of supporting approximately 250 individual wolverines. This is unlikely and highly suspicious (lowering the number would certainly lower the bar for recovery purposes).

As the Service acknowledges, there is no accurate scientific census of current wolverine populations (78 Fed. Reg. at 7868) and in Montana, which purportedly has the highest concentration of wolverine in the DPS, wolverines were trapped at unsustainable levels for nearly thirty years (Inman (2007) at 91) and likely extirpated from various mountain ranges due to over-trapping. *See* Squires (2006) at 40 (Letter from John Squires to Sue Sillick, Mont. Dep’t of Transp. (April 28, 2006)); Squires (2007).¹

¹ The only reason wolverines were able to persist in Montana in the face of unregulated and unsustainable trapping is because Montana contains large designated wilderness

The Service's pre-European settlement number is also incongruous with population densities that historically or currently existing in other regions, including Canada. In the proposed rule, for example, the Service states that the wolverine population in western Canada is estimated to include 15,089 to 18,967 individuals. 78 Fed. Reg. at 7869. The Service, however, does not (but must) explain why western Canada contains two orders of magnitude more wolverines than the contiguous United States is capable of containing, i.e., only 250 wolverines existed pre-European settlement in the contiguous United States but western Canada (which is a slightly larger but comparable region) currently has 15,000 to 18,000 wolverines.

Moreover, as the Service concedes, a substantial number of the estimated 250-300 wolverines in the DPS are likely unsuccessful breeders or non-breeding subadults. That means the effective population size is dangerously low.

By definition, the effective population only considers those individual wolverines that are reproductive. For example, if the minimum viable population is 100 individuals but in any year 50 of those individuals are juveniles (pre-reproductive) and 30 individuals are post-reproductive age, then only 20 individuals are contributing genetically to population maintenance and species survival and part of the effective population. Most biologists consider this number – the effective population size of a DPS – to be the most important number for conservation purposes because it measures the potential for inbreeding and/or population extirpation. Effective population size determines rates of loss of genetic variation, fixation of deleterious alleles and the rate of inbreeding. A small effective population size also shows reductions in population growth and increases the likelihood of extinction.

The best available science reveals the effective population of the DPS is extremely small, likely less than 50 and well below the number needed for maintenance of genetic diversity. *See* 78 Fed. Reg. at 7884 (*citing* Franklin (1980) and Allendorf and Luikart (2007)). Schwartz et al. (2009) states that “[e]stimates for wolverine populations in Montana, Idaho, and Wyoming, where most of the wolverines in the contiguous United States exist, indicate a small population (effective population size, 35 individuals; credible limits, 28-52 individuals).” This is exceptionally low and well below what is thought to be adequate for genetic diversity and viability. *See* Schwartz et al. (2009); *see also* Reed et al. (2003) (estimates of minimum population viability); Traill et al. (2010)(pragmatic population viability targets).

areas and refugia that were not easily accessible to trappers. *See* Banci (1994) at 108 (“The persistence of wolverine populations in Montana, despite years of unlimited trapping and hunting, was attributed solely to the presence of designated wilderness and remote, in accessible habitat.”).

As explained by the Service, the “concern with low effective population size was highlighted in a recent analysis which determined that without immigration from other populations at least 400 breeding pairs [of wolverine] would be necessary to sustain the long-term genetic viability of the contiguous U.S. wolverine population.” 75 Fed. Reg. at 78053 (*citing* Cegelski et al. (2006)). As the Service now recognizes, the current population of wolverine in the contiguous United States is nowhere close to 400 breeding pairs and well below the number needed to sustain genetic viability.

In the proposed rule, the Service cites Brock (2007) and questions Cegelski et al.’s (2006) finding, stating that “our current understanding of wolverine ecology suggests no subpopulation historically or presently at carrying capacity would approach 400 breeding pairs within the contiguous United States.” 78 Fed. Reg. at 7879. But this statement is misleading; its accuracy depends on how one defines “subpopulation.”

The Service’s statement may be accurate if one is referring to the small subpopulation in isolated habitat patches or complexes within the contiguous United States. The current science reveals that each of these small subpopulations would not – by themselves – likely support an effective population of 400 wolverines. *See* Brock (2007) at 26 (fig. 3). But this does not mean – and Brock (2007) certainly does not suggest – that the “metahabitat” that comprises the available wolverine habitat in the contiguous United States is not capable of supporting the necessary number of breeding pairs needed for viability.

Brock (2007) found that primary wolverine habitat in the Rocky Mountain states was “island like” and appears to be “capable of supporting up to approximately 460 (234 - 1,133) adult female wolverines, the majority of which would occur within six habitat complexes.” Brock (2007) at 21 (emphasis added). This is just the number of female wolverines that could be supported in the Rocky Mountain region. The number does not include the total population (which would include males), does not estimate the effective population (reproductive females and males) and does not include the entire DPS region.

Notably, Brock (2007) states that because a minimum of 400 breeding pairs of wolverines or 1-2 migrants per generation are required to ensure long-term genetic viability of the species in the contiguous United States (expressly citing and relying on Cegelski et al. (2006)), and none of the individual 6 habitat patches or complexes – by themselves – would be able to support 400 breeding pairs, the DPS is “likely to be now, and may have always been, dependent on dispersal among these patches.” *Id.* at 30. As such, Brock (2007) does not say that the available wolverine habitat in the contiguous United States could not support 400 breeding pairs.

The Service, nonetheless, states in the proposed rule that habitat in the contiguous United States is not “capable of supporting anywhere near [400 breeding pairs].” No

citations or authority is provided in support of this conclusion. Nor does this conclusion square with the best science or population numbers in Canada.

In sum, based on the best available science, the DPS is extremely vulnerable due to small total and effective population size, is not presently viable or sufficiently connected to the Canadian population (no migrants to buttress population), and is in danger of extinction throughout a significant portion of its range.

Indeed, within the DPS there are geographic areas that have functionally no wolverine populations at all. The Great Lakes, for instance, which once were in the historic range of the wolverine now have zero and other areas like Colorado, California, Utah, and parts of Oregon, Washington, and even most of Wyoming have no functional populations (which is what the Service uses to define range). As such, wolverines are not only “endangered” in a significant portion of their range – as that term is defined in the ESA and interpreted by the courts -- they are extinct or functionally extinct (not even remotely viable and/or no breeding populations) in a significant portion of its range. Wolverines are absent from most of or at least half of its range within the DPS.

b. The effects of climate change are occurring now.

Second, in the proposed rule, the Service recognizes the exceptionally small and vulnerable population of wolverine in the contiguous United States (described above) but defends its “threatened” determination on the grounds that the major threat facing wolverine (climate change) is not presently occurring or imminent. This is incorrect.

The threat to wolverines posed by climate change (which will decrease the amount of available habitat and increase fragmentation) in combination with other threats such as mortality from trapping is on-going. As the Service concedes in the December 14, 2010, warranted but precluded finding: “Warming temperatures are reducing snow pack in the western North American mountains through a higher proportion of precipitation falling as rain and higher rates of snowmelt during winter . . . This trend is expected to continue with future warming. . . Shifts in the initiation of spring runoff toward earlier dates are also well documented.” 75 Fed. Reg. at 78044 (emphasis added); *see also* Brodie and Post (2010) (correlating decline in snowpack due to climate change with declining wolverine numbers in Canada); U.S. Global Change Research Program (USGCRP), Global Climate Change Impacts in the United States 135 (2009) (Cascade Mountains spring snowpack has declined 25% in the last half-century and is projected to continue to decline by up to 40% in the next 30 years).

Indeed, McKelvey et al. (2011)’s projected 31% loss of current wolverine habitat in the contiguous United States due to climate warming by the time interval centered on 2045 will not occur overnight. The loss of habitat has already begun and will continue in

the coming years and decades. *See* McKelvey (2011)(Figure 4); *accord* USGCRP, Impacts at 135. In the Service’s own words:“Based on this information, wolverine habitat in the contiguous United States . . . is shrinking and is likely to continue to shrink with increased climate warming.” 78 Fed. Reg. at 7876 (emphasis added). Moreover, as mentioned above, actual GHG emissions are exceeding the worst case scenarios envisioned by Intergovernmental Panel on Climate Change (IPCC) and used in McKelvey (2011)’s ensemble projections. Thus, not only are the impacts of climate change currently impacting wolverine habitat but these impacts are worse than projected.

The Service must also take into account that the impacts of climate change on wolverine will not stop at the international border between the contiguous United States and Canada. Losses to wolverine habitat (and populations numbers) in Canada will also occur and should be factored into the equation.

c. There are no plans to address or reduce the effects of climate change.

Third, the Service’s determination that the DPS does not qualify for endangered status because the threat posed by climate change is not “imminent” fails to take into account that there are no meaningful plans to address or reduce the effects of climate change or change its course over the next 20 years. For example, EPA has concluded that GHG emissions linked to climate change are pollutants, subject to regulation under the federal Clean Air Act. *See* 78 Fed. Reg. at 7883. The Service concludes in the proposed rule, however, that it has “no basis to conclude that implementation of the Clean Air Act in the future (40 years, based on global climate projections) will substantially reduce the current rate of global climate change through GHG emissions.” *Id.* “[W]e conclude the Clean Air Act is not designed to address the primary threat to wolverine of the loss of snowpack due to the effects of climate change.” *Id.*

Under these circumstances, wolverines are in danger of extinction because current emissions have already committed the planet to significant temperature increases and there is no indication that climate change (the major threat to the DPS upon which listing is based) will be abated, let alone reversed. Absent a major change in course, therefore, it is certain to get worse. And, as mentioned above, actual GHG emission data indicate that the situation is worse than scientists had projected.

For example, under the Service’s rationale, if you are pushed off a tall building and are falling to certain death then you are in danger of extinction and would qualify for “endangered” status because you will hit the ground in a matter of seconds. But if you are pushed out of an airplane at 30,000 feet you are only “threatened” because it will take a few minutes to hit the ground (i.e., the threat is not imminent). This approach is illogical and inconsistent with the plain language and intent of the ESA. If the species is in trouble and there is no potential or reasonable possibility that the situation for

wolverine will improve (i.e., no parachute), then the species is presently in danger of extinction and endangered.

2. The Service Must Adequately Address All Threats Facing Wolverines.

To ensure the long-term survival and recovery of the DPS, the final rule listing wolverine should adequately discuss and address all threats that are, may be, or are likely to harm wolverine as outlined below.

a. The Service should take steps to combat the causes of climate change.

Despite concluding that climate change caused by GHG emissions is the “driving primary threat” to wolverines, the Service states that the listing of wolverines “will not regulate greenhouse gas emissions.” 78 Fed. Reg. at 7886-87. And, the Service’s proposed 4(d) rule limits activities that it will consider a take to intentional or incidental “trapping, shooting, collection, capturing, pursuing, wounding, killing, and trade.” *Id.* at 7888. Activities that contribute GHG emissions, therefore, are exempted from take and, apparently, Section 7 consultation (even though GHG emitting activities “may affect” wolverines). Indeed, if wolverines are listed, the Service can and should require Section 7 consultation on EPA’s Clean Air Act regulations for GHG emissions. As it now stands, however, the proposed rule fails to address the driving existential threat to the survival and recovery of the DPS: climate change. The Service must rectify this abdication of its statutory duties.

As discussed above, wolverines warrant listing as an endangered—not threatened—species. As an initial matter, therefore, the Service has no authority to exempt (and should not attempt to exempt) activities that would otherwise meet the statutory definition of “take” under the ESA. *See* 16 U.S.C. §§ 1532(19), 1538(a)(1)(B). Because the Service has concluded that GHG emissions throughout the next century will cause wolverines to face extinction (78 Fed. Reg. at 7886) any substantial emitter of GHG pollution should be subject to liability for take (unless and until they receive a valid incidental take permit (ITP)).

Further, even if wolverines are not ultimately listed as an endangered species, the Service does not enjoy complete discretion to exempt actions that pose the primary danger to a threatened species from the take prohibition. Section 4(d) of the ESA provides: “Whenever a species is listed as a threatened species . . . the Secretary shall issue such regulations as he deems necessary and advisable to provide for the conservation of such species.” 16 U.S.C. § 1533(d). Thus, the Service is required to issue 4(d) rules that provide for the conservation of the species. *Sierra Club v. Clark*, 755 F.2d 608, 612-13 (8th Cir. 1988); *Louisiana ex rel. Guste v. Verity*, 853 F.2d 322, 332-33 (5th Cir. 1988). “Conservation” means use “of all methods and procedures which are necessary to bring any endangered species or threatened species to the point which the

measures provided pursuant to this chapter are no longer necessary.” 16 U.S.C. § 1532(3). Thus, any special 4(d) rule must ensure the survival and recovery of the DPS.

Here, the Service acknowledges that its proposed rule does not provide for the survival and recovery of the DPS because it fails to address and exempts GHG emissions -- the primary threat to wolverines – from the take prohibition and Section 7 consultation even though limiting GHG emissions is legally mandated, administratively manageable, fair and absolutely necessary. The best science reveals wolverines cannot be conserved unless GHG emissions are addressed. *See* McKelvey et al. at 2888 (miroc 3.2 projection). And, administering a 4(d) rule that applied to significant GHG emitters would be manageable, as there are only a handful of upstream producers of fossil fuels and energy in the United States (and the world). *See* David A. Grossman, *Warming Up to a Not-so-radical Idea: Tort-Based Climate Change Litigation*, 28 Colum. L. Rev. 1, 28-29 (2003) (describing consolidation in energy sector and noting, among other things, that “[i]n 1997 twenty of the world’s petroleum and coal companies accounted for roughly half of the world’s carbon emissions”).

While perhaps politically difficult, there is nothing unfair in holding the producers of pollution that is altering the world and destroying wolverine habitat (among other things) liable for the consequences of their actions. This is particularly the case since the deleterious impacts of GHG emissions have been scientifically established and widely accepted for well over a decade. Plus, GHG emitters could always seek ITPs that would exempt them from liability (though, issuance of ITPs might not always be warranted. *See* 16 U.S.C. § 1539(a)(2)(B)(iv).

In addition, as mentioned above, to the degree that the Service’s statement seeks to exempt federal actions that result in significant GHG emissions from Section 7 consultation requirements regarding wolverines, it is inconsistent with the plain mandates of the ESA. Under Section 7 each “federal agency shall, in consultation with and with the assistance of the Secretary, insure that any action authorized, funded, or carried out by such agency . . . is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat of such species which is determined . . . to be critical.” 16 U.S.C. § 1536(a)(2). “Agency action” includes all actions that “directly or indirectly caus[e] modifications to the land, water, or air.” 50 C.F.R. § 402.02. An agency must formally consult with the Service if a proposed action “may affect listed species or critical habitat.” *Id.* § 402.14(a). The only exception is if the action is “not likely to adversely affect” species or habitat. *Id.* §§ 402.13(a), 402.14(b). An action is “not likely to adversely affect” species or habitat if its effects are “expected to be discountable, insignificant, or completely beneficial.” Endangered Species Consultation Handbook xv (1998).

As such, the Service has no discretion to exempt activities – like significant sources of GHG emissions -- that may adversely affect listed species or critical habitat

from Section 7 consultation requirements. *See e.g., TVA v. Hill*, 437 U.S. 153, 173-74 (1978) (Section 7 “admits of no exception”). Here, the best science shows that GHG emissions are causing climate change which, in turn, is the “driving primary threat” to the existence of wolverines over the course of the next century. 78 Fed. Reg. at 7874, 7886. Accordingly, any federal action that significantly contributes to GHG emissions over the next century must undergo formal Section 7 consultation. Emitters of GHG pollution are no more exempted from Section 7 than any other polluter whose pollution fouls the “land, water [or] air” and adversely affects listed species. We do not believe that this will create an undue administrative burden because, as mentioned above, there are only a handful of upstream fossil fuel and energy-related actions that result in significant GHG emissions (i.e., fossil fuel leases or licensing of large power plants or refineries).

If the Service subsequently determines that GHG emissions will jeopardize species or adversely modify critical habitat, then the Agency will have to determine whether there are “reasonable and prudent alternatives [RPAs].” 16 U.S.C. § 1536(b)(3)(A). If there are no RPAs, the action may have to be abandoned or the Agency will have to seek an exemption. *Id.* at § 1536(g). If, on the other hand, the action will not result in jeopardy the Service will issue an incidental take statement (ITS) and list reasonable and prudent measures (RPMs) to minimize impacts. *Id.* at § 1536(b)(4)(C)(i). Given the wide and economical availability of alternative energy sources and energy efficiency and conservation measures, there will almost always be RPAs and RPMs available to avoid jeopardy and minimize impacts to wolverines. It is therefore not only illegal but also unwise to suggest that GHG emissions that will impact wolverines should be exempted from Section 7 consultation.

- b. The Service should take steps to conserve all remaining habitat, return wolverines to areas that were historically occupied by the species, and reduce all non-climate stressors.

The National Fish, Wildlife, and Plants Climate Adaptation Partnership—which includes the Service, NOAA, and the Association of Fish and Wildlife Agencies—recently issued its National Fish Wildlife and Plants Adaptation Strategy (2012) (hereinafter “the Strategy”) for managing fish, wildlife, and plants in the face of the ongoing crisis of climate change.

The Strategy includes seven goals: (1) conserve habitat to support healthy fish, wildlife, and plant populations and ecosystem functions in a changing climate; (2) manage species and habitats to protect ecosystem functions and provide sustainable cultural, subsistence, recreational, and commercial use in a changing climate; (3) enhance capacity for effective management in a changing climate; (4) support active management in a changing climate through integrated observation and monitoring and use of decision supporting tools; (5) increase knowledge and information on impacts and responses to

fish, wildlife, and plants to climate change; (6) increase awareness and motivate action to safeguard fish, wildlife, and plants in a changing climate; and (7) reduce non-climate stressors to help fish, wildlife, plants, and ecosystems adapt to a changing climate.

The Service should carefully review and incorporate the goals of the Strategy before issuing a final rule on wolverine. Of particular importance to the DPS is goal (1)'s and (7)'s recommendations to conserve habitat and reduce non-climate stressors.

Regarding goal (1), the Strategy notes that the top management options for protecting species threatened by climate change are to “increase[] habitat conservation and/or restore habitat connectivity.” Strategy at 56. “Increasing the number, quality, and size of conservation areas can increase the opportunities for individual species to adapt to climate change, and also make it more likely that native biodiversity will be conserved.” *Id.* Protecting core wolverine habitat that exists outside protected National Parks and Wilderness Areas, in particular, will be important for the DPS. The Strategy notes that “[i]ncreasing the number (redundancy) and distribution of protected fish, wildlife, and plant populations is important” because it will make the species more likely to “better withstand or adjust to the impacts of climate change.” *Id.* And, connectivity between conservation areas will be critical: agencies must “[c]onserve corridors and transitional habitats between ecosystem types through traditional and non-traditional (e.g., land exchanges, rolling easements) approaches.” *Id.* at 59. Much of this work should be conceived and operate at a landscape scale. *Id.*

Goal (7)'s recommendation to reduce non-climate stressors is also critically important. By reducing the negative impacts of non-climate stressors, wildlife managers can make wildlife threatened by climate change more resilient and more able to cope with the impacts of climate change. *Id.* at 76. Examples of such stressors include habitat loss and fragmentation, pollution, over-harvest, incidental harvest, and illegal trade of wildlife. *Id.* at 76.

Because of the importance of having large amounts of habitat and redundant populations, we strongly support and encourage the Service to work with various state wildlife agencies and explore reintroduction efforts not only in Colorado but other regions in the contiguous United States that were historically but are no longer occupied by wolverine. This includes parts of Utah, California, Oregon, the Great Lakes region (parts of Michigan and Minnesota) and areas in Washington, Idaho, and Wyoming. Extensive potential wolverine habitat exists in these areas. *See* Aubry et al. (2006) (fig. 4); McKelvey et al. (2011) (tbl. 2); *see also* Inman et al. (2013); Copeland et al. (2010); Magoun et al. (2013). Some of these areas will remain important bastions of late spring snow and wolverine habitat in both the near and long term. *See* McKelvey et al. (2011) (tbl. 2).

Aubry et al. (2007), for instance, notes that “[g]iven the fragmented nature of suitable habitat conditions for the wolverine at the southern extent of its historical range in North America . . . and extensive urban and agricultural development in intervening areas, the reestablishment of southern wolverine populations seems unlikely to occur without human intervention.” Aubry (2007) at 2156 (emphasis added). “Because southern wolverine populations appear to have been extirpated by human-caused mortality factors that no longer pose a significant threat, reintroduction may be an appropriate management strategy.” *Id.*

Moreover, some areas that could host breeding populations of wolverine have other barriers, making natural colonization less likely when considered in combination with human-created factors. Magoun (2013), for example, advises that Oregon has geographic barriers, including the Snake River and Hell’s Canyon that makes immigration from Idaho more difficult. Magoun (2013) also states that the lack of a currently identified breeding population in Oregon does not mean that Oregon cannot support one. Human intervention may be what is required for some of these areas, including Oregon, California, Colorado, and elsewhere to be home to breeding populations of wolverine.

c. The Service must prohibit intentional trapping of wolverines in Montana.

We strongly support the Service’s prohibition on the intentional trapping, snaring, and/or hunting of wolverines in the contiguous United States and Montana (the only state to still authorize the intentional trapping of the species). Trapping is a significant non-climate stressor that likely extirpated wolverines from the contiguous United States in the early Twentieth Century (Aubry et al. (2006) at 2155-56) and will impair wolverine resiliency in the face of climate change.

Earlier this year, the State of Montana sent out a public press release stating that it intends to petition the Service for a special 4(d) rule that would create an exemption from take and allow and/or authorize the continued trapping of wolverines in Montana. The Service should reject any such petition.

As noted in both the December 14, 2010, warranted but precluded finding and the proposed rule, the intentional trapping and killing of wolverines in Montana—even 5—when combined with other existing threats (climate change and an already small population) harms wolverine. Montana’s trapping program, “when combined with other threats . . . may contribute to the likelihood that the wolverine will become extirpated in the foreseeable future by increasing the speed with which small populations of wolverines are lost from isolated habitats, and also by increasing the mortality levels for dispersing wolverines that are required to maintain the genetics and demographics of wolverine populations in the contiguous United States.” 75 Fed. Reg. at 78050-78051 (emphasis added).

Wolverines, in particular, are especially vulnerable to trapping (and sodium cyanide M-44s) due to their “habit of ranging widely in search of carrion, which would bring them into frequent contact with poison baits and traps.” 75 Fed. Reg. at 78050; Hornacker and Hash (1981) at 1297; Map (M-44 and wolverine habitat). “Because of their scavenging nature, wolverines come readily to bait and are vulnerable to skilled trappers . . . Females with newborn young are limited in their ranging and foraging and are especially vulnerable to easily obtained trap baits.” Hornacker and Hash (1981) at 1300. In one study, many of the wolverines captured and marked for study “were missing one or more toes and many had broken teeth.” *Id.* at 1297. The researchers believed “many of these mutilations were the result of encounters with leg-hold traps.” *Id.*

The best available science reveals that human caused mortality of wolverine from trapping can harm local populations of wolverine in a number of ways. According to the Service, “[h]uman caused mortality is likely additive to natural mortality due to the low reproductive rate and relatively long life expectancy of wolverines . . . This means that trapped populations likely live at densities that are lower than carrying capacity, and may need to be reinforced by recruits from untrapped populations to maintain population viability and persistence.” 75 Fed. Reg. at 78050 (emphasis added).

A study in British Columbia, for example, found that wolverine trapping in 15 of 71 wolverine population units “was unsustainable, and that populations in those unsustainable population units are dependent on immigration from neighboring populations or untrapped refugia.” 75 Fed. Reg. at 78050; Lofroth et al. (2007). This finding is consistent with other research studies, including Krebs et al. (2004) which documented that nearly half of all wolverine mortalities in populations open to trapping were human-induced and that wolverine populations “would decrease . . . in the absence of immigration from untrapped populations.” *Id.*; Krebs et al (2004).

In Montana, the “wolverine is especially susceptible to [trapping] . . . due to reduced levels of gene flow, low reproductive rates and need for large areas of undisturbed habitat.” Cegelski et al. (2003) at 2916; *see also* Ruggerio et al. (2007) at 2146 (same). “Our current understanding is that no other type of human activity has the same potential to cause populations to become dangerously small or locally extirpated. Thus, decisions concerning wolverine [trapping] appear to be critical to the persistence of extant populations and to the recolonization of depleted populations, especially isolated mountain ranges.” Ruggerio et al. (2007) at 2146. Trapping “could have significant negative effects” on wolverine populations inhabiting small mountain ranges in Montana. 75 Fed. Reg. at 78050; Squires et al. (2007).

Hornacker and Hash (1981) captured and marked 24 wolverine in the Flathead National Forest during a 5-year period from 1972-1977. Hornacker and Hash (1981) at

1289. During this study, 15 of the 24 wolverines were killed by trappers, only 3 by natural causes. *Id.* at 1290. An additional 6 wolverines were also caught by trappers in the South Fork before the study even began. *Id.* The large number of wolverines killed in traps during the five-year study led the researchers to conclude that “of the biotic factors in the wolverine’s environment, predation by humans appears to be the most likely factor to have affected the number of wolverines.” *Id.* at 1297.

Between 2001-2007, Inman et al. (2007) monitored 26 wolverines (16 females and 10 males) in the Greater Yellowstone Area of Montana, Idaho, and Wyoming. During the project, the researchers documented 11 wolverine mortalities. Five mortalities resulted from natural causes and 6 were human-caused, including 5 trapped and 1 roadkill. Inman et al. (2007) at 88-89. Trapping “accounted for the majority of human-related mortality of wolverines” in the six year study. *Id.* at 91. During the six year period the study team documented the “production of only 4 offspring.” *Id.* at 90.

In another study, the Forest Service’s Rocky Mountain Research Station instrumented and followed 36 wolverines in two study areas in western Montana (Pioneer Mountains and Glacier National Park). *See* Squires et al. (2007). From 2002-2005, the researchers documented 14 wolverine mortalities (10 males and 4 females) and reported losing contact with 5 additional male wolverines. *Id.* at 2216. Nine of the documented 14 wolverine mortalities (6 males and 3 females)—64% of the total wolverine mortalities—were attributable to trapping. *Id.* at 2218. According to the researchers, “harvest from trapping was the primary factor that affected wolverine survival.” *Id.* at 2218.

The documented wolverine mortalities in the Pioneer Mountains—a small island range in southwestern Montana with a high density of forest roads and snowmobile access—were particularly devastating. Of the 14 wolverines instrumented and followed in the Pioneer Mountains study area, 6 were killed in traps, including 4 adult males and 2 pregnant adult females. Squires et al. (2007) at 2217-18. These mortalities had a “disproportionately large effect on wolverine demography” in the Pioneers. *Id.* The researchers report that while they were able to capture 2 subadults in the Pioneers during the first year of live trapping they failed to capture any subadults in the 3 subsequent years, “suggesting that the harvesting of reproductive adults may have suppressed reproduction in the area.” *Id.* at 2218. Trapping was the “dominant factor affecting wolverine survival across our study areas.” *Id.* According to the researchers: “Given the few individuals that occupy small ranges, localized trapping pressure can affect these small populations despite a moderate state-wide harvest limit. The wolverine population in the Pioneer study, for instance, was reduced by an estimated 50% from harvest during 2003-2005. *Id.* at 2218 (emphasis added).

In a June 2006 report, researchers noted that “[h]igh mortality rates, especially of reproductive females, appeared to be the major issue facing wolverine populations.” Squires et al. (2006) at 41. Of the three individual wolverines captured in the Beaverhead

Mountains for the study, two wolverines—the mother and father—were killed by trappers in 2005 and the sole offspring died of natural causes. *Id.* at 40. Subsequent to this event, “no other wolverine tracks were detected in the entire portion of the Beaverhead Mountains ranging from Hamby Lake to Lost Trail Ski Area during 2005.” *Id.* The researchers concluded that future monitoring would be required in order to determine whether other wolverines still exist in the area “and if not, whether this area is recolonized, and how quickly.” *Id.*

The results from the Pioneers and Beaverhead Mountains have likely been repeated in recent history in Montana. *See* Letter from John Squires, U.S. Forest Service, to Sue Sillick, Mont. Dep’t of Transp. (Apr. 28, 2006) (“The events described in the Pioneers in the late 1970’s in comments 28 and 29 [trapping of 8-10 wolverines from mountain range in late 1970’s followed by no further trapping] basically outlines intense pressure over a short period of time that results in local extinction or population reductions. Based on anecdotal evidence, this may have occurred in the Whitefish Range, the Swan Range, the Little Belts, and now the Pioneers during this study. When wolverines are discovered whether by researchers or not, harvest pressures increase due to word of mouth, and this pattern seems to have occurred repeatedly in western Montana.”).

A study on the fecundity of female wolverine in Montana (Anderson and Aune, (2008)) shows just how significant the cumulative impact of even a small annual trapping quota has been on the state's wolverine population. Results from the analysis of female wolverine trapped in two regions in Montana between 1985 and 2005 showed that 49% of the total 83 females trapped during this 20 year period -- a total of 41 wolverines -- were pregnant at the time of capture. Among the 83 female wolverines that were trapped, 13 were half-year-old juveniles, which are sexually immature. If these are excluded from the numbers, the percent of pregnant mature wolverine trapped was 58.5%. The study was divided into a northwest and a southwest region. The percentage of mature females that were pregnant at the time of trapping in the northwest region was 77%. The corresponding percent in the southwest region was 48%.

Anderson and Aune (2008) also extrapolated the average litter size for the Montana wolverine population given the fecundity results. The average came out to about 2.7 kits. Multiplying this number by the 41 pregnant females killed by traps between 1985 and 2005 shows that roughly 111 unborn wolverine were killed along with their mothers. Each of these baby wolverine killed in utero could have contributed to future generations of wolverine. The 13 young (6-month old on average) female wolverine killed by traps during this 20 year period never had an opportunity to reach sexual maturity and bear offspring.

For these reasons, the Service must continue to recognize that the impacts from intentional trapping in Montana (even 5), when combined with other threats, are serious, may contribute to significant negative effects, and may contribute to the likelihood that

wolverines will become extinct. *See* 75 Fed. Reg. at 78050-51. No exemptions or special 4(d) rule, therefore, that would allow Montana to continue to trap wolverines—even five—should be issued.

d. The Service must prohibit the incidental take of wolverines.

The incidental trapping of wolverines is another non-climate stressor that should be minimized in order to maximize wolverine resiliency and ability to adapt to the impacts of climate change.

The Service notes that during the 2008-2009 trapping season two wolverines were incidentally killed in traps set for other species in Beaverhead and Granite Counties in Montana. These two mortalities occurred in an area of the State closed to wolverine trapping. Other incidents of accidental trapping have also been reported. *See e.g.*, Montana Fish, Wildlife and Parks (MFWP), Furbearer Occurrence/Distribution Report (Feb. 2, 2012) (reporting wolverine caught in leg-hold trap and released in Ravalli County); MFWP, Furbearer Occurrence/Distribution Report (Jan. 1, 2012) (reporting wolverine caught in conibear trap set for martin in Beaverhead County); MFWP, Furbearer Occurrence/Distribution Report (Jan. 25, 2009) (reporting female caught in leg-hold trap and released in Lewis and Clark County); *see also* Banci (1994) at 101-02 (“Most of the current trapper harvest in Montana is believed to be incidental, in sets for other furbearers (B. Giddings, pers. Comm.)”); *id.* at 101 (noting that 35% to 90% of wolverine trapping in Alberta, Saskatchewan, and Manitoba is incidental).

In addition, four cases of incidental wolverine trapping have occurred in Idaho in recent years, Wildlife Services incidentally trapped three wolverines while attempting to trap wolves (one in 2004, 2005, and 2010), and another wolverine was incidentally trapped in Wyoming in 2006. Additional evidence of wolverine being accidentally caught in traps and snares set for other species is well documented in scientific literature. *See e.g.*, Hornacker and Hash (1981) at 1300; Inman (2007d) at 89.

Wildlife Service’s use of sodium cyanide M-44s may also kill wolverines. Like its predecessor the “humane coyote getter”, M-44s used olfactory baits to lure carnivores. When an animal (or person) tugs on the M-44, a spring propels the plunger into the polyethylene capsule that contains approximately one gram of sodium cyanide. The capsule is broken and the cyanide powder sprays into the mouth of the animal. The cyanide then mixes with saliva or moisture and morphs into hydrogen cyanide gas, which is readily absorbed by the lungs. Death is rapid (generally two minutes) which is enough time for a wolverine to disperse from the cyanide gun and not be found.

Information concerning the placement or setting and firing of sodium cyanide M-44s in the West was requested from Wildlife Services. But, citing concerns about user-groups' privacy, Wildlife Services provided only coarse, county-level detail about where sodium cyanide M-44s were set or fired. With the aid of Kurt Menke of Bird's Eye GIS, we overlaid the occupied habitat of wolverines onto the M-44's "set" data. The map reveals that the use of sodium cyanide M-44s has the potential to harm wolverines and other forest carnivores.

Despite reported incidents of accidental trapping of wolverines (the actual number of incidents is likely significantly higher) and the potential exposure to poison bait sets like sodium cyanide M-44s, the Service continues to downplay the effects of wolverine mortality from otherwise legal trapping and snaring and even erroneously refers to states like Idaho and Wyoming as "refuges" from trapping (they are only a refuge from intentional trapping, not other forms of trapping in wolverine habitat). This approach fails to take into account the impact that trapping for other species in wolverine habitat poses to the species.

In many subpopulations, the loss of a single individual—especially a reproductive female—is significant. The Service's December 14, 2010, warranted but precluded finding, Copeland et al. (2010), McKelvey et al. (2011), and Schwartz et al. (2009) all demonstrate that the trapping wolverines (intentionally or incidentally), when added to the other existing threats to the species (climate change and an already small population), has harmed, is harming, and will continue to harm an already fragile population in Montana.

Indeed, as mentioned above, the effective population in Montana is likely less than 35. Schwartz et al. (2009). And, it is currently facing the threat of climate change which is resulting in increased habitat fragmentation (less connectivity) and—by 2045—is projected to result in a 33% or greater reduction in the amount of available wolverine habitat in the contiguous United States. McKelvey et al. (2011) at 2893, 2894. Decreased connectivity and additional losses of wolverine habitat will result in the additional loss of wolverine populations, especially in Montana's smaller mountain ranges. *Id.* at 2894; 75 Fed. Reg. at 78045. The Service notes that the projected loss in habitat "should result in a loss of wolverine numbers that is greater than the overall loss of habitat area." *Id.* at 78045.

Under these circumstances, every individual wolverine in the DPS counts and no mortalities are incidental to the DPS. For example, Squires et al. (2007) estimated that four mountain ranges in western Montana collectively contained only about 13 wolverines. Squires et al. (2007) at 2217. "[S]uch population densities are too low for long-term persistence without connectivity to other populations." McKelvey (2011) at 2894. The trapping and killing of one wolverine (either intentionally or accidentally) from this isolated population can result in serious harm to the population. Squires (2007)

at 2218. The trapping and killing of two pregnant females is devastating to the local population. *See id.*; Krebs (2004) at 4999-500.

Based on data from the Glacier Wolverine Project (2002-2007), for instance, researchers determined that the population in the protected park where no trapping occurs “was stable to just very slightly increasing.” Chadwick, *The Wolverine Way* at 250 (2010). But, using the same data, they predicted “that the additional death of one more adult, particularly a breeding-age female, would have put the population on a downward trend. Two such deaths would have made for a much sharper rate of decline.” *Id.* (emphasis added).

In *The Wolverine Way*, Douglas Chadwick explains how this occurs: “Wolverine females don’t produce offspring until at least age three and then have two kits per litter every other year, on average So in a female’s breeding life, which would end after around age ten, she’ll have three litters and a total of six kits. The sex ratio is 50:50, so we’ve got three new males and three new females in the population. Half those kits will die before reaching maturity. Now we’re down to 1.5 males and 1.5 females as the offspring. One of each has to survive and stick around to replace their parents in the population. That leaves half a male and half a female to disperse and carry genes somewhere else. You can see how a small change in the number of breeding females would make a big difference.” *Id.* If a nursing mother “is taken in a trap anywhere within her wide hunting range, you’d have to subtract both that breeding-age female and her young starving back in the den from the population.” *Id.* Likewise, should “the resident adult male be trapped instead during the course of his still wider and more frequent travels, a transient male could come in and kill the kits. If the newcomer doesn’t kill them, the kits still grown up with less protection from other wolverine and less experience gained from traveling with a father after they separate from the mother. Both factors lower the offspring’s chances of successfully reaching adulthood and either replacing numbers in the population or transporting genes to other homelands.” *Id.*

Inman (2008) notes that Montana’s decision to close part of the State to wolverine trapping “could result in higher adult female survival, which is influential in population growth rate Protection in WMU 4 could also result in higher survival of young dispersing wolverines as they move through these mountain ranges. In essence, closing WMU 4 maximizes the chance that these areas are source areas rather than sinks.” *Id.* Conversely, authorizing wolverine trapping or trapping for other species in wolverine habitat does just the opposite by increasing the chances that these areas are sinks rather than sources.

As such, in order to minimize and avoid the loss of individual wolverines, we support the prohibition on incidental take in the special 4 (d) rule (see discussion below) and request that the Service, in cooperation with other federal and state agencies (Forest Service, BLM, DNRC), take affirmative steps to regulate, restrict, and limit all forms of

trapping, snaring, and poisoning in occupied wolverine habitat (including dispersal corridors) on public lands.

As mentioned in the proposed rule, 94% of the currently occupied wolverine habitat in the contiguous United States is federally owned, with most managed by the Forest Service. 78 Fed. Reg. at 7874. So restricting all forms of trapping and snaring in occupied habitat on National Forest lands would help alleviate a major threat to subpopulations in the DPS (and certainly benefit other listed species like lynx). In addition, Wildlife Services should be prohibited from using traps, snares, M-44s, poisons, and any and all other predator control devices within occupied wolverine habitat on public lands.

To the extent that Montana and any other state in the contiguous United States (including those included in any proposed 10j rule) intend to authorize otherwise legal trapping and snaring in occupied wolverine habitat, they should only be allowed to do so after each—individually—first prepare a habitat conservation plan (HCP) and obtain an incidental take permit (ITP) in accordance with Section 10 of the ESA, 16 U.S.C. § 1539. Under no circumstances should the Service adopt a one-size-fits-all special 4(d) rule that would allow states to authorize trapping and snaring in occupied wolverine habitat.

- e. It is incorrect and premature for the Service to conclude that dispersed recreational activities—including winter recreational activities near wolverine denning areas—do not result in take and have no negative effects on wolverine.

The best available science reveals that dispersed recreational activities—especially winter recreational activities—have the potential to result in take of wolverine because they disrupt and limit use of wolverine natal denning areas. Steps should therefore be taken to continue to study the effects of dispersed recreation on wolverines and, where necessary, minimize the harm from such activities.

Heinemeyer et al. (1999), for example, refers to the rapid increases in winter recreational activities—in particular the advancements in the power and technology of snowmobile machines—as being a new, potential impact to natal denning habitats. Heinemeyer (1999) discusses a “growing body of evidence” suggesting that “female wolverines are prone to disturbance at den sites, particularly at the natal dens where birthing occurs. Idaho wolverine selected specific natal den and kit-rearing habitat and responded negatively to human disturbance near these sites (Copeland 1996). Female wolverine abandoned dens in Finland (Pulliainen 1968) and Norway (Myrberget 1968) when disturbed by human activity.” Heinemeyer (1999) at 2. “As snowmobiling and backcountry skiing continue to grow in popularity, there is increasing concern that reproductive habitats may become limiting to populations due to human disturbance. Protection of reproductive denning habitat may be critical for the persistence of

wolverine. A clear association between wolverine presence and refugia (e.g., Wilderness Areas) may be strongly linked to a lack of available reproductive denning habitat outside protected areas.” Heinemeyer (1999).

In addition, a number of peer-reviewed papers refer to the absence of human presence as one of the key attributes of wolverine habitat. *See* Hornocker and Hash (1981); Banci (1994) (same); Landa et al. (1998) (same); Rowland et al. (2003) (same); Copeland (1996) (same); Krebs et al. (2007); May et al. 2012 (same). The Service maintains the negative association between human presence and wolverine habitat “may simply” reflect the wolverine’s preference for cold, snowy, and high elevation habitat that humans avoid. While this may be true, in light of the available research, the negative association may also reflect a sensitivity to human disturbance in certain areas during certain times of the year.

In British Columbia, for instance, Krebs et al. (2007) states that both male and females responded negatively and avoided using areas with extensive backcountry heli-skiing. In Heinemeyer (2001), the authors also documented a correlation between winter recreational use and wolverine presence. In the Targhee Creek sampling unit (SU) the authors note that the area receives the most intensive snowmobile activity in the study area. One potential wolverine den was found in the unit but the den was located “in the single small basin that was free of snowmobile activity.” Heinemeyer (2001) at 17. The authors saw “high levels of wolverine activity in this same general area” in 2001 which was, again, one of the few areas without snowmobile activity. *Id.* The same findings were documented in other SUs. In the East Centennial SU, most wolverine tracks “were found in areas with little snowmobile activity.” *Id.* Likewise, in the Palisades SU, where wolverine denning habitat was impacted by snowmobile activity and a new heli-ski operation, the researchers found no wolverine presence after 2 years of research. “The region appears to contain high quality wolverine habitat, but these habitats appear to be incurring potentially large impacts due to the widespread winter recreational activities.” *Id.*

Notably, in Heinemeyer (2001), the researchers “located wolverine tracks throughout the Targhee Creek SU but never within areas of high snowmobile activity. This may indicate that not only are wolverine sensitive to recreational use near denning sites, but also need secure areas for foraging activities.” *Id.* “[I]t appears that snowmobile activity may be forcing [a wolverine] to resort to possibly atypical behavior or risky behaviors to meet winter food requirements.” *Id.*

Noise from over-snow vehicles is a likely disturbance factor associated with human activity that may result in harassment and habitat disruption for wolverine. Olliff et al. (1999) studied the effects of winter recreation on wildlife in the Greater Yellowstone area and found that, for mid-size carnivores like wolverine, “...foraging behavior in forested areas may be disrupted along groomed trails and other travel

corridors. Displacement or avoidance may occur due to noise of snowmachines or to human presence . . .” Olliff et al. (1999) at 67. A “significant effect on carnivores from winter recreational activities is displacement from or avoidance of high recreational use areas (i.e., groomed trails, marked trails, destination areas, and play areas). Human use will increase where high recreational use areas exist or are provided.” *Id.* at 68.

In the 2009 Beaverhead-Deerlodge Revised Forest Plan FEIS, the Forest Service notes that: (1) wildlife species that inhabit the Forest, including but not limited to elk, wolverine, lynx and mountain goats, experience displacement in winter from snowmobile intrusions into their habitat at the time when demands on their energy reserves are highest (p. 509); (2) female wolverines may be negatively impacted by snowmobiles near their den sites (p. 513); (3) advances in snowmobile technology enable snowmobilers to ride many of the steep slopes and high basins used by wolverines during the February-April birthing and whelping period and there is “increasing evidence” that females may be harmed by such disturbance near their den sites (p. 513); (4) snowmobile disturbances may have adverse effects on the survival of young wolverine; and (5) increased cross-country snowmobile use can displace wolverines from big-game winter range where they can forage on winter-killed elk and deer. (p. 48, App. B).

Likewise, in the Bitterroot Travel Plan DEIS, the Forest Service notes that since the wolverine population in the Sapphires and other areas on the east side of the valley is likely quite small and relatively isolated from other wolverine populations, loss of a litter due to disturbance could potentially result in extirpation of wolverines from this area. Closing some high elevation areas to snowmobile use reduces the risk of impacts to wolverine populations. (DEIS, p. 3.5-22,).

Despite this body of evidence, the Service exempts winter-recreation activities from take in the special 4 (d) rule (see below) and states in the proposed rule that it does not have any information to suggest that winter recreational use in wolverine habitat is having a “negative effects on wolverine.” 78 Fed. Reg. at 7878. The Service goes on to state that that “best scientific information available does not substantiate dispersed recreational activities as a threat to wolverine.” *Id.* This finding is belied by the best science (discussed above) and premature.

Indeed, for support, the Service cites three studies -- Heinemeyer et al. (1999), Heinemeyer et al. (2001), and Heinemeyer et al. (2012) – none of which would support a “no take” exemption or finding of no negative effect.

The first paper—Heinemeyer et al. (1999)—is an early and preliminary update on one year of a three-year study on winter recreational use in wolverine habitat in the Targhee National Forest. According to the author: “It is preliminary to draw conclusions on potential impacts to wolverine based on a single survey effort.” Despite the author’s caveat, however, the Service does just that: it draws conclusions from the update.

Specifically, the Service relies on Heinemeyer (1999) to document skier and snowmobile activity in some of the wolverine survey units. But the study expressly stated that “further investigations” are required to understand the potential impacts to wolverine from such activities (these “further investigations” document potential impacts to wolverine denning habitat and foraging from winter recreational activities). *See* Heinemeyer (2001) at 17.

Moreover, Heinemeyer (1999) did not say there are no negative effects from winter recreation. On the contrary, as mentioned above, the authors expressly stated that they do not know “the impacts that [winter recreation] may have on a denning female. It is possible that females will avoid potential denning habitats that receive chronic ski traffic Ski activity may have the potential to discourage the use of the impacted habitats by a reproductive female. In combination with the widespread snowmobile use . . . there may be significant recreational impacts to wolverine denning habitats in this area.” *Id.* at 11 (emphasis added). The authors note, for instance, that the West Targhee Creek basin survey unit in the study, which housed the probable den site “was completely free of snowmachine activity.”

The second paper—Heinemeyer et al. (2001)—is a report on the three-year study updated in Heinemeyer (1999). As mentioned above, this report raises serious questions about the impacts of winter recreational activities on wolverine denning habitat: “Winter recreational use, particularly snowmobile and heli-skiing, may be having potentially severe localized impacts on wolverines.” Heinemeyer (2001) at 18 (emphasis added). “Management of snowmobile and heli-skiing is warranted in areas with significant amount of potential denning habitat and should include access restrictions during the denning period (February – April).” *Id.*

The third paper—Heinemeyer et al. (2012)—is a progress report from an on-going study investigating the interactions between wolverines and winter recreation in central Idaho. The progress report notes that wolverines and some forms of winter recreation “may occur in the same landscapes” at the regional scale, including “an overlap between areas occupied by wolverines and areas used for winter recreation at the home range scale.” Heinemeyer (2012) at 17. That said, the progress report cautions that they have yet to fully analyze how wolverines in these landscapes are responding to potential disturbance including “examining temporal activity patterns, movement patterns and habitat use relative to winter recreation intensity and use.” *Id.* The authors note, for example, that “one female [they] monitored for 3 years in a highly recreated landscape attempted to den but failed in the first year and has not denned in the subsequent 2 years of monitoring.” *Id.*

In fact, Heinemeyer (2012) expressly notes that uncertainties remain and more research is required: “In order to significantly advance our understanding of the potential effects of winter recreation on wolverines, we need to both continue to monitor additional

wolverines in other highly recreated landscapes. We are currently working to identify additional study areas with wolverines and relatively high levels of recreation . . . We especially lack sufficient data (recreation and wolverine) in areas with intense, high levels of recreation.”

The Service’s conclusion, therefore, that dispersed recreational activities present no threat to wolverines and will not result in take is premature. The conclusion is not supported by (and in some instances squarely contradicted by) the best available science including the very three Heinemeyer papers cited by the Service in the proposed rule. There is an obvious disconnect between the facts found and the decision made that needs to be corrected in the final rule. *See Gifford Pinchot Task Force v. U.S. Fish & Wildlife Serv.*, 378 F.3d 1059, 1065 (9th Cir. 2004).

Importantly, the Service should not be making sweeping (and unsupported) conclusions about the effects of winter recreation on wolverine given—by its own admission—the lack of any comprehensive studies. As the Agency concedes: “No rigorous assessments of anthropogenic disturbance on wolverine den fidelity, food provisioning, or offspring survival have been conducted.” 78 Fed. Reg. at 7878. In the face of uncertainty, and studies thus far showing that the use of over-snow vehicles may result in the harassment of wolverines and disruption of its habitat (outlined above), the Service should adhere to the precautionary principle, error on the side of wolverines (an endangered species), limit all non-climate stressors on the species, and evaluate each and every proposal to engage in winter recreational activities in occupied wolverine habitat on a project-level basis and only after carefully reviewing the best available science. *See Krebs et al. (2007) at 2190* (“We think precautionary steps to protect habitat should be taken until more focused research examining the behavioral and demographic responses of wolverines to human use is completed to establish thresholds for managers working to resolve conflicts in multiuse landscapes.”). Making broad generalizations and providing blanket exemptions from the take prohibition now, based on early preliminary progress reports, is inappropriate and illegal.

f. The Service must take into account and study the direct, indirect, and cumulative effects of forest management on wolverine.

In the proposed rule, the Service notes that “few effects to wolverines” from logging or prescribed fires on forest lands have been documented and that some studies suggest wolverines tolerate such uses. For this reason, the Service exempts forest management from the take prohibition in the special 4 (d) rule (see below) and concludes that wolverines are “not thought to be dependent on specific vegetation or habitat features that might be manipulated by land management activities, nor is there evidence to suggest that land management activities are a threat to the conservation of the species.” 78 Fed. Reg. at 7879. At this stage, it is premature to be exempting forest management activities from take and/or making sweeping conclusions regarding impacts from such activities.

The “lack of evidence” that logging does not pose a threat to wolverine does not mean no threat exists. As the Service concedes, very little study has occurred and there is certainly no consensus. Some studies might suggest wolverines are able to “tolerate” logging and prescribed burning. Other studies, however, suggest logging—especially industrial logging in occupied habitat—may be a concern because it adversely impacts prey species.

Ruggiero et al. (2000) (*The Ecology and Conservation of Lynx*), for example, notes that “wolverines generally scavenge for ungulates along valley bottoms and forage and den in remote, high-elevation areas (Hornacker and Hash 1981; Morgan and Copeland 1998). Thus if managers wished to provide habitat for wolverines, they could pay particular attention in the planning process to ungulates winter range and other aspects of ungulate habitat in order to assure a consistent supply of carcasses for wolverine to scavenge. Ruggiero et al 2000 at 436. Wolverine, for instance, inhabit moose winter range in Montana. Moose in Montana live at higher elevations than deer and elk (they are up in the snow zone) and require mature and old growth forests with small alpine fir in the understory as winter range. So the effects of logging – which degrade moose winter range -- can be detrimental to wolverine.

Hornacker and Hash (1981) documented wolverine movement and range in Northwest Montana and determined that the availability of food was the “primary factor determining movements and range.” Hornacker and Hash (1981) at 1298. “Food is apparently more available, either as carrion or prey, in the mature or intermediate timber stands preferred as wolverine habitat, especially edge and ecotonal areas around cliffs, slides, blowdowns, basins, swamps, and meadows.” *Id.* “Cover provided by mature or intermediate timber is also important in habitat selection. Wolverines appeared reluctant to cross openings of any size such as recent clear cuts or burns. Tracking revealed that wolverines meandered through timber types, hunting and investigating, but made straight-line movements across large openings. Tracks further indicated they often ran or loped across such openings. We found, in the course of snow tracking different individuals a total of 203 km, that they often bedded down in snow on open outcrops . . . in timber types which afforded cover.” *Id.* at 1299.

Hornacker and Hash (1981) also notes the logging may also have indirect effects on wolverine: the “use of roads built in logging operations should be strictly regulated, particularly in winter. If higher inaccessible country is adjacent to clear-cut areas, wolverines will separate themselves naturally from human activity in summer. In winter and early spring, however, human access on snowmobiles or all-terrain vehicles could bring about disturbance and conflict, not to mention ease of access for fur trappers.” *Id.* at 1300; *see also* Ruggiero et al. (2000) at 436 (“wolverines generally avoid areas of human activity. To limit the threat of human-caused disturbance or mortality, managers could also restrict access to portions of the landscape where wolverines are most likely to

occur.”). Evidence also exists suggesting that winter motorized use has the potential to reduce foraging opportunities for mid-size carnivores like wolverine. *See* Olliff et al. (1999) at 67 (“Snowmobile trails may facilitate travel for some carnivores, but compaction of snow due to grooming or from snowmobile use off existing roads or trails may adversely affect the subnivean habitat of prey species and, therefore, impact foraging opportunities for carnivores.”).

As mentioned above, 94% of the currently occupied wolverine habitat in the contiguous United States is in Federal ownership with most on National Forest land. So how National Forest lands in occupied by wolverine habitat are managed is extremely important and requires further study and research. At this point, however, the Service should not be making any broad-brush conclusions regarding impacts from logging and forest management in the absence of further analysis. Instead, in the face of such uncertainty, the Service should apply the precautionary principle and “give the benefit of the doubt to the species.” *Conner v. Burford*, 848 F.2d 1441, 1454 (9th Cir. 1988); *accord Defenders of Wildlife v. Babbitt*, 958 F. Supp. 2d 670, 677, 680 (D.D.C. 1997). Doing so is critical in order to maximize the wolverine’s resilience by minimizing non-climate stressors.

g. The Service must take steps to maintain and restore connectivity among subpopulations in the contiguous United States.

As mentioned above, restoring and maintaining connectivity among wildlife populations threatened by climate change should be one of the highest management priorities for the Service. *See* Strategy at 56. This is critical for the DPS.

Wolverines in the contiguous United States likely exist as a metapopulation. *See* Aubry et al. (2007). As explained by the Service, a metapopulation “is a network of semi-isolated populations, each occupying a suitable patch of habitat in a landscape of otherwise unsuitable habitat. . . . Metapopulations require some level of regular or intermittent migration and gene flow among subpopulations, in which individual populations support one another by providing genetic and demographic enrichment through mutual exchange of individuals. Individual subpopulations may go extinct or lose genetic viability, but are then ‘rescued’ by immigration from other subpopulations, thus ensuring the persistence of the metapopulation as a whole.” 75 Fed. Reg. at 78031. Some of the subpopulations within this metapopulation are extremely small and vulnerable, some consisting of less than 10 individuals. 78 Fed. Reg. at 7867.

According to the best science, if the metapopulation dynamics break down, either due to changes within the subpopulation or due to the loss of connectivity (from climate change or development) then “the entire metapopulation may be jeopardized due to

subpopulations becoming unable to persist in the face of inbreeding or demographic and environmental stochasticity.” 78 Fed. Reg. at 7867.

As such, it is extremely important for the Service, in concert with other federal (BLM, Forest Service, Park Service) and state land management agencies to take any and all available steps to maintain, protect, and restore connectivity between isolated subpopulations of wolverine. Existing “linkage zones” between subpopulations of wolverines should be identified and protected, especially when those areas overlap with public lands (federal or state). *See* Strategy at 59 (connectivity needs must be identified, prioritized, and conserved).²

In the proposed rule, the Service suggests wolverines are able to disperse and traverse large areas of unsuitable habitat, as is evidenced by a single male wolverine’s trek from Wyoming into Colorado. While this may be the case, it does not alleviate the need to improve dispersal and gene flow and lower the risks to dispersing individuals by making travel corridors and/or linkage zones for wolverines as safe as possible. Dispersing wolverines “likely use primary habitat to the extent it is available, but they are willing to travel through areas of lower quality habitat than is typically used by residents.” Brock (2007) at 30.

As such, safe places where wolverines can find food, shelter, and security while moving across the landscape between areas of suitable habitat must be identified and protected, especially on public lands. “Appropriate management of wolverine linkage zones in public ownership . . . is crucial.” Brock (2007) at 30. In the valley bottoms and on private lands, “adequate regulatory or incentives for conservation easements and county planning efforts along with targeted highway projects will likely be critical for maintaining connectivity of wolverine habitats and ensuring persistence of the species.” *Id.* This may require construction of over-pass/under-pass animal crossings in high priority linkage areas. Highways, in particular, can pose a real threat to dispersing wolverines. Inman et al. (2007), for example, documented (or received information about) three wolverines that were killed in motor-vehicle collisions on U.S. highways. Similarly, Krebs et al. (2004) found that in twelve mortality studies vehicle and train collisions accounted for more than ten percent of human-caused wolverine mortalities.

Taking steps to protect connectivity (and lessen the risk of take) is especially important along the Cascade Range and between the Cascades and the Rockies. Singleton et al. (2002) and the Washington Wildlife Habitat Connectivity Working Group (2010) identify habitat linkages within the Cascades and between wolverine subpopulations in

² The Service should use its authority under section 5 of the ESA, 16 U.S.C. § 1534, to acquire conservation land for critical corridors. The Service should also use other non-traditional methods of establishing corridors, such as acquiring conservation easements, using the conservation reserve program, and conducting land swaps. Strategy at 59.

the Cascades and Rockies that are vital to the long term recovery and persistence of Washington's wolverines.

Maintaining connectivity is also important in places like the Northern Rockies' central insular mountains ranges—often referred to as the “Central Linkage Ecosystem (CLE)”. The CLE includes important habitat on public land in between three large core areas in the Northern Rockies: the Crown of the Continent in northwest Montana, the Salmon-Selway area in Idaho, and the Greater Yellowstone Ecosystem.

As explained by Inman (2008), the CLE area is comprised of smaller ranges that hold relatively few individual wolverines but do include reproductive females. Because of the smaller ranges geographic position, wolverine “reproduction and subsequent dispersal from within these areas may be the most likely way of exchanging wolverine genes among the big three ecosystems.” Inman (2008) at 10. “Protection in these central insular mountains could result in high adult female survival, which is influential in population growth rate . . . Protection [of this area] could also result in higher survival of young dispersing wolverines as they move through these mountain ranges. In essence, protection [of the CLE] . . . maximizes the chance that these areas are source areas rather than sinks.” *Id.*

Schwartz et al. (2009) at 3228 also indicates that the CLE is a critical linkage corridor for wolverine subpopulations in the Rocky Mountains. And McKelvey et al. (2011) at 2891-92, demonstrates that this area will remain critical for connectivity purposes as reductions of habitat worsen with the advance of climate change.

- h. The Service must study and take all necessary steps to maintain and restore connectivity between wolverines in the contiguous United States and Canada.

The long-term maintenance of wolverines in the contiguous United States will require connectivity between subpopulations within the DPS and populations to the north in Canada. 78 Fed. Reg. at 7885. At present, however, there is an apparent lack of connectivity between the two populations. *Id.* (citing Schwartz et al. (2009)).

“The apparent loss of connectivity between wolverines in the northern Rocky Mountains and Canada prevents the influx of genetic material needed to maintain and increase genetic diversity in the contiguous United States. The continued loss of genetic diversity may lead to inbreeding depression, potentially reducing the species' ability to persist through reduced reproductive output or reduced survival.” *Id.* The cause for this lack of connectivity is uncertain. The Service notes that wolverine habitat appears to be well-connected across the border region (Copeland et al. (2010), (Fig. 2)) and there are few man-made obstructions.

It is therefore imperative that: (1) the Service study why there is a lack of connectivity and gene flow between the Canadian population of wolverines and the DPS; (2) take steps to address the source of the problem (once detected); and (3) supplement the DPS – as needed -- with individuals from Canada.

i. The Service must consider the overall, cumulative effects to the DPS.

The Service must take a hard look at, and carefully consider, the cumulative effects to the DPS before adopting a final rule (and before issuing a final special 4 (d) rule and/or 10j rule for the Southern Rockies).

Cumulative impacts are “the impacts on the environment which result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions.” 40 C.F.R. § 1508.7. Cumulative impacts can result from “individually minor but collectively significant actions taking place over a period of time.” *Id.*

The proper consideration of cumulative impacts requires “some quantified or detailed information; general statements about possible effects and some risk do not constitute a hard look absent a justification regarding why more definitive information could not be provided.” *Great Basin Mine Watch v. Hankins*, 456 F. 3d 955, 971 (9th Cir. 2006). Moreover, the “analysis must be more than perfunctory; it must provide a useful analysis of the cumulative impacts of past, present, and future projects.” *Id.* The Service “must do more than just catalogue relevant past projects in the area.” *Id.* The Service must give a “sufficiently detailed catalogue of past, present, and future projects and provide adequate analysis about how these projects, and the difference between the projects, are thought to have impacted the environment.” *Id.* Some “quantified assessment of their combined environmental impact” is required. *Id.* at 972.

With respect to the DPS, the Service acknowledges that the impacts from climate change, when combined with various threats to wolverines, such as trapping (intentional and incidental), small population size (total and effective), and increased isolation, are significant. 78 Fed. Reg. 7885-86. Missing from the assessment, however, is the additional, cumulative impact to the DPS from other non-climate stressors including but not limited to forest management, dispersed recreation, loss of foraging opportunities, increased access into core habitat, and transportation corridors. To date, the Service has only considered these activities in isolation, not in combination with other existing threats such as climate change, trapping, and an already small population size.

For example, the Service should analyze how transportation corridors, forest management, and other forms of human recreation (winter recreation), ski area expansion, travel planning, in conjunction with the anticipated increase in fragmentation between subpopulations due to climate change, may cumulatively impact connectivity between subpopulations within the DPS and the DPS and Canada. Likewise, the Service should analyze how the loss of one or two individual wolverine (especially a reproductive female) from a subpopulation due to incidental trapping may, in conjunction with other activities such as transportation corridors, shrinking habitat, and natural forms of mortality (predation, avalanche, starvation), cumulatively impact the DPS.

Individually, each of the above mentioned activities and events may not pose a significant threat to the DPS. But collectively, industrial logging in core habitat or corridors (that renders habitat unsuitable for prey species and results in more roads), highways, private land development, intentional and incidental trapping (that will only increase with the new wolf trapping regulations), winter recreation, loss of habitat and more fragmentation from climate change, and other forms of mortality (predation and starvation), may be significant to the DPS and must be analyzed.

As explained by the Ninth Circuit, “cumulative impacts of multiple projects can be significant in different ways.” *Klamath-Siskiyou v. BLM*, 387 F. 3d 989, 994 (9th Cir. 2004). “Sometimes the total impact from a set of actions may be greater than the sum of the parts.” *Id.* “For example, the addition of a small amount of sediment to a creek may have only a limited impact on salmon survival, or perhaps no impact at all. But the addition of a small amount here, a small amount there, and still more at another point could add up to something with a much greater impact, until there comes a point where even a marginal increase will mean that no salmon survive.” *Id.* The same principle applies to the DPS.

Incidental trapping or poisoning, in conjunction with the loss of individuals on highways, ski area expansion, travel planning, loss of prey species, winter recreation, and shrinking habitat may pose a threat to a subpopulation for the DPS that is greater than the sum of the individual parts. Inman et al. (2007), for example, documented or learned of three wolverines killed by motor vehicles in the Greater Yellowstone Area during the course of their study. Krebs et al. (2004) also documented instances of road and rail kill. And, as mentioned earlier, Heinemeyer et al. (2012) documented (preliminary results) the repeated failure of a female wolverine to den, which may have been due to disturbance from significant snowmobile activity in the area. If motorized winter recreation prevents female wolverines from denning and rearing kits, it will depress wolverine populations and limit the number of wolverines available to disperse. When viewed in conjunction with other threats, loss of wolverines from transportation corridors, incidental trapping, and potential harm to denning from winter recreation may be a significant source of wolverine mortality that reduces the number of wolverines available for dispersal.

- j. The Service should direct the U.S. Forest Service to develop and implement forest plan standards for wolverine.

The Forest Service, more than any other land management agency, has the ability to protect wolverines by instituting protective management practices on National Forest lands. As mentioned above, 94% of the currently occupied wolverine habitat in the contiguous United States is in Federal ownership, with most managed by the Forest Service. Yet, existing Land and Resource Management Plans (“Forest Plans”) barely mention wolverine, let alone include specific goals, objectives, and standards for properly managing the species. This is true even though wolverine are considered a sensitive species and often designated as a management indicator species (“MIS”).

Now that a sizeable body of research about the habitat and life-cycle needs of wolverines is available, the Service should exercise its authority under Section 7(a) of the ESA, consult on wolverines with the U.S. Forest Service, and amend all Forest Plans within wolverine habitat to adopt protective standards for the species. The approach used for lynx may provide a good template, i.e., prepare a Wolverine Conservation Assessment and Strategy (WCAS), enter into conservation agreements with the Forest Service, and then prepare DPS or region-wide management direction for wolverine including a Northern Rockies Wolverine Management Direction and Southern Rockies Wolverine Management Direction that amends Forest Plans with wolverine habitat.

3. The Special 4(d) Rule.³

The ESA’s implementing regulations extend the prohibitions against take of endangered species to all threatened species. 50 C.F.R. § 17.31. Whenever a special rule in 50 C.F.R. §§ 17.40 to 17.48 for a threatened species is adopted, however, the special 4 (d) rule controls: it contains “all the applicable prohibitions and exceptions” for that species. 50 C.F.R. § 17.31(c).

Here, the proposed special rule 4(d) rule for the DPS would “prohibit the take of any wolverine in the contiguous United States when associated with or related to trapping, hunting, shooting, collection, capturing, pursuing, wounding, killing, and trade.” 78 Fed. Reg. at 7888. The Service explains that in this context “any activity where wolverines are attempted to be, or are intended to be, trapped, hunted, shot, captured, or collected in the contiguous United States will be prohibited.” *Id.* Under the special 4(d) rule, it will also be “prohibited to incidentally trap, hunt, shoot, capture,

³ The comments in this section are presented in the alternative to our position, stated earlier, that wolverine warrant listing as an endangered species. If wolverines are listed as endangered then the take prohibition of Section 9 would apply and no special 4(d) rule would be necessary.

pursue, or collective wolverines in the course of otherwise legal activities.” *Id.* (emphasis added).

The proposed special 4(d) rule also notes that all “otherwise legal activities involving wolverines and their habitat . . . are not considered to be take under this regulation.” *Id.* (emphasis added). This includes “activities that occur in and may modify wolverine habitat” such as, but not limited to logging, prescribed fires, dispersed recreation, and development activities. *Id.*

While we are supportive of the Service’s prohibition on take in the special 4(d) rule—including the prohibition on incidental take—we strongly disagree with the Service’s exemption of certain activities, including but not limited to forest management and dispersed recreational activities, from the take prohibition and offer the following comment and concerns regarding the proposed language (in addition to our comments above regarding GHG emissions).

First, the Service should clarify that the reference to and prohibition of incidental take of wolverine from otherwise legal trapping is just a reiteration of Section 9 of the ESA’s prohibition on take and does not and will not—by itself and absent obtaining the requisite incidental take permit (ITP)—exempt or otherwise shield any person (as defined under the ESA), including states, from liability for authorizing activities that may result in the incidental take of wolverine. Nor should the Service adopt a one-size-fits-all special 4(d) rule that allows for incidental take in the absence of obtaining an ITP.

Section 9 of the ESA prohibits any person from taking an endangered species, whether intentional or not. *See* 16 U.S.C. § 1538(a)(1)(B). “Any taking and every taking—even of a single individual of the protected species—is prohibited by the Act.” *Loggerhead Turtle v. County Council of Volusia County, Florida*, 896 F. Supp. 1170, 1180 (M.D. Fla. 1995), *aff’d by Loggerhead Turtle v. County Council of Volusia Co.*, 148 F.3d 1231 (11th Cir.1998), *cert. denied*, 526 U.S. 1081 (1999). As mentioned above, this take prohibition applies to threatened species as well (50 C.F.R. § 17.31 (a)) and, as proposed, must be included in the special 4(d) rule for wolverine.

The word take in the ESA is defined broadly and means to “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.” 16 U.S.C. § 1532 (19). Congress intended the word take to be defined in the “broadest possible manner to include every conceivable way” in which a person could harm or kill fish or wildlife. S. Rep. No. 307, 93rd Cong., 1st Sess. 1, *reprinted in* 1973 U.S. Code Cong. & Admin. News 2989, 2995.

Notably, to qualify as a take under the ESA, the harm to the species need not be purposeful. Rather, take may occur as the result of an accident, i.e., it might be incidental to an otherwise legal activity. *See Babbitt v. Sweet Home Chapter of Communities for a*

Great Oregon, 515 U.S. 687, 704 (1995); *National Wildlife Federation v. Burlington Northern Railroad*, 23 F. 3d 1508, 1512 (9th Cir. 1994). In other words, the intentional, purposeful, accidental, and/or incidental take of a listed species is treated the same for purposes of Section 9 of the ESA. Intent is irrelevant.

The Service, therefore, should clarify that the reference to incidental take in the special 4(d) rule merely outlines the scope of the existing take prohibition in Section 9 of the ESA. Nothing in the special 4(d) rule should be interpreted as providing—nor should a one-size-fits-all special 4(d) rule provide—cover for the incidental taking of wolverine, absent obtaining an individual ITP pursuant to Section 10 of the ESA, 16 U.S.C. § 1539(a)(1)(B).

The process for obtaining an ITP is an important one. As a prerequisite to receiving an ITP, all applicants must submit a habitat conservation plan that specifies the impact that will likely result from such taking, what steps the applicant will take to minimize and mitigate such impacts, the funding that will be available to implement such steps, and any alternative actions to such taking that were considered by the applicant and the reasons why such alternatives are not being utilized. 16 U.S.C. § 1539(a)(2)(A). After providing an opportunity for public comment, the Service will then issue the applicant an ITP if, and only if: (1) the taking is incidental; (2) the applicant will, to the maximum extent practicable, minimize and mitigate the impacts of such taking; (3) the applicant ensures that adequate funding for the conservation plan is provided; and (4) the taking will not appreciably reduce the likelihood of the survival and recovery of the species in the wild. *Id.* The ESA explicitly directs that all ITPs “contain such terms and conditions as the Secretary deems necessary or appropriate.” 16 U.S.C. § 1539(a)(2)(B)(v).

Second, the Service notes in the proposed special 4(d) rule that “all otherwise legal activities involving wolverines and their habitat that are conducted in accordance with applicable State, Federal, tribal, and local laws and regulations are not considered to be take under this regulation.” 78 Fed. Reg. at 7888. This blanket statement exempting other forms of “take” is premature (the studies are limited and on-going and there is no consensus yet), completely unnecessary, and contradicted by the best science.

The Service must take a precautionary approach to protecting threatened and endangered species. *Connor v. Burford*, 848 F.2d 1441, 1454 (9th Cir. 1998). And, as outlined above, many of these otherwise legal activities have the potential harm individual wolverines and their habitat. Non-climate stressors like forest management, winter recreation, travel planning, transportation corridors, and incidental trapping – especially when viewed cumulatively -- must be minimized in order to enhance the resiliency of wolverines to the effects of climate change. *See* Strategy at 76. Given the precarious and vulnerable state of the DPS, the take of even a single wolverine can cause irrevocable damage.

As mentioned above, take is defined broadly and includes harassing, harming, pursuing, hunting, shooting, wounding, killing, trapping, capturing, or collecting, or to attempt to engage in any such conduct. 16 U.S.C. § 1532(19). Whether or not a specific project or activity, i.e., industrial logging project, forest thinning, prescribed fire, private land development, ski area expansion, winter recreation, travel planning, and predator control results in “take” of wolverine should be evaluated at the project or activity level, if and when those decisions are made. The Service should not be making blanket assumptions now about the impacts of yet-to-be proposed activities and projects. Exempting potentially harmful activities from the take prohibition is premature, unnecessary, and violates the ESA (such an approach fails to ensure the DPS will be conserved).

Third, while the Service has determined that it need not conduct a NEPA analysis for a listing determination, completion of a NEPA analysis is required before adopting a special 4(d) rule. *See In Re Polar Bear ESA Listing and 4(d) Regulation Litigation*, 818 F. Supp. 2d 214 (D.D.C. 2011). Any such analysis must take a hard look at the direct, indirect, and cumulative impacts that such a rule would have on the DPS and evaluate any and all reasonable alternatives to the proposed special 4 (d) rule.

Finally, it is important that the special 4(d) rule prohibit all trade in wolverine skins (including captive bred wolverines) in the United States. Failing to do so will create a potential “black market” as the allowable trade will provide cover and opportunity for poached animals and there is no way to distinguish the skin of wild wolverine from a captive wolverine (or at least no explanation on the differences is provided).

4. The Service Should Designate Critical Habitat For Wolverine.

Protecting habitat may be the single most important way for wildlife managers to protect and preserve resilient wildlife population in the face of climate change. Strategy at 56. When enacting the ESA, “Congress recognized the destruction of ‘natural habitat’ to be the main threat to the species.” *TVA v. Hill*, 437 U.S. 153, 179 (1978). The principle conceptual basis of the ESA, therefore, provides “a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved.” 16 U.S.C. § 1531(b). Under the ESA, the Service is directed “to the maximum extent prudent and determinable” to designate critical habitat for listed species concurrently with listing. 16 U.S.C. § 1533(a)(3).

By definition, the term “critical habitat” means: (1) the specific areas occupied by the species (at the time of listing) on which are found those physical or biological features that are essential to the conservation of the species and require special

management considerations and protection; and (2) specific areas that are not currently occupied by the species (at the time of listing) but that are—upon a determination by the Secretary—essential for the conservation of the species. *Id.* at § 1532(5)(A).

Designating an area as critical habitat is important under Section 7 of the ESA, 16 U.S.C. § 1536(a)(2). Section 7(a)(2) of the ESA requires all federal agencies to consult with the Service to ensure any actions they fund, authorize, or carry out will not “result in the destruction or adverse modification of” critical habitat. 16 U.S.C. § 1536(a)(2). The Service must issue a Biological Opinion if the proposed action may affect critical habitat and the Biological Opinion must contain reasonable and prudent alternatives to avoid any action resulting in the adverse modification of critical habitat. *See* 50 C.F.R. § 402; 16 U.S.C. § 1536 (b)(3)(A).

In the proposed rule, the Service maintains the designation of critical habitat is “not determinable” at this time. We disagree. The best available science reveals designating critical habitat is determinable.

The specific areas currently occupied by the species which include the primary constituent elements (PCEs) for wolverine (e.g., sites for denning and areas with late spring snow) and areas not currently occupied but essential for long-term survival and recovery are well known and documented in the scientific literature. *See e.g.*, McKelvey et al. (2010); Copeland et al. (2009); Aubry et al. (2006). We know, for instance, areas in Colorado, Wyoming, Utah, Oregon and California that retain late spring snow and, as such, are essential to the long-term survival of wolverines. *See* Aubry et al. (2006) at 2153; McKelvey et al. (2010) at 2888. Indeed, in the proposed rule, the Service concedes that the “deep, persistent spring snow layer in the Copeland et al. (2010) model captures all known wolverine den sites in the DPS. . .” 78 Fed. Reg. at 7868. In short, the Service knows where all known den sites are located within the DPS and where required late spring snow persists (at least for now). The Service also knows where key linkage zones for wolverine connectivity exist. *See* Schwartz et al. (2009); McKelvey et al. (2010); Singleton et al. (2002); Washington Wildlife Habitat Connectivity Working Group (2010).

In addition, the Service should not forgo designating critical habitat because it is “not prudent” at this time. In the proposed rule, the Service states that designating critical habitat is not prudent when one or both of the following situations exist: (1) the species is threatened by taking or other activity and the identification of critical habitat can be expected to increase the degree of threat to the species; and/or (2) such designation would not be beneficial to the species. 78 Fed. Reg. at 7889 (citing 50 C.F.R. § 424.12(a)(1)). Neither of these circumstances exist.

First, the Service does not consider taking of wolverine—by itself—to be the primary threat to the species. Such taking, either by intentional trapping in Montana or

from incidental trapping, is considered a secondary threat that, in concert with climate change and other threats (small population), continues to harm the DPS. That said, even if it was a primary threat, wolverine habitat (and any designated critical habitat) exists in remote, high elevation alpine environments, away from most human disturbance. *See e.g., Banci (1994) at 103.*

Moreover, there is no evidence that designating critical habitat for wolverine—especially over a large are of core habitat and linkage zones (possibly unoccupied areas important for connectivity amount subpopulations)—would increase take. Nor has the Service provided any evidence to suggest that it would. In the past, wolverine research projects have sparked interest in areas and resulted in increased take (Squires et al. (2007)), but the designation of critical habitat will have no bearing on these projects.

Indeed, the Service has already modeled wolverine habitat in the contiguous United States, as well as known denning areas and verified wolverine occurrence records and made that information available to the public. Designating critical habitat in these areas and publishing a map in the Federal Register surely will not provide new information or increased interest beyond what already exists in the public arena.

Second, designating critical habitat would benefit the species in a number of ways. The most obvious is that the identification of specific areas deemed “essential for the conservation of the species” will, if managed properly, provide for the recovery of wolverine. *See 74 Fed. Reg. at 8646.*

As explained by the Service, “the process of proposing and finalizing a critical habitat rule provides the Service with the opportunity to determine the physical and biological features essential to the conservation of the species within the geographical area occupied by the species at the time of listing, as well as determine other areas essential for the conservation of the species. The designation process includes peer-review and public comment on the identified physical and biological features and essential areas.” *Id.* This is an extremely valuable process that will ultimately result in a net benefit for the species, decrease the loss of important habitat (the leading cause of extinction), inform recovery planning, and increase the likelihood of eventual recovery (the ultimate goal). Indeed, the most recent and comprehensive analysis of the Service’s and NMFS’s data shows that species with critical habitat are twice as likely to be recovering as species without it. *See Taylor et al. (2006) (The Effectiveness of the ESA: A Quantitative Analysis).*

In Sweden, Aronsson and Persson (2012) note that even in areas with very small wolverine populations, given time and adequate habitat protection, wolverine populations will grow and expand to adjacent suitable habitats. Absent human intervention, these wolverine populations can grow to become self-sustaining breeding populations, however

it requires strong habitat and species protection, such as critical habitat designations, to enable to species to occupy its historic range.

Designating critical habitat will also provide additional regulatory protections. As mentioned above, every Federal agency must consult on actions that may affect critical habitat and must avoid destroying or adversely modifying critical habitat. The analysis of effects to critical habitat “is a separate and different analysis from that of the effects to the species, and may provide greater regulatory benefits to the recovery of a species than listing alone.” 74 Fed. Reg. at 8624. The analysis of effects to critical habitat requires a determination of whether the impact will adversely modify the habitat in a way that will affect both the survival and recovery of the species. This represents an added regulatory benefit. *See* 59 Fed. Reg. 5820, 5834 (describing the importance and benefits of critical habitat designation).

As mentioned above, the DPS exists as a metapopulation that depends on connectivity and gene flow between isolated subpopulations in order to survive. *See* Brock et al. (2007); Cegelski et al. (2006). These connectivity areas (in addition to core areas) would certainly benefit from the added regulatory protections provided by critical habitat designation. Designating parts of the central linkage ecosystem (CLE) in the Northern Rockies, for instance, would give the Service an important tool to protect important linkage zones for wolverines. *See* Schwartz et al. (2009), Singleton et al. (2002), Washington Wildlife Habitat Connectivity Working Group (2010) (showing least cost linkage routes); McKelvey et al. (2010) (showing how linkage routes would change in response to climate warming).

Designating critical habitat for wolverine would also provide additional educational benefits. “Designation of critical habitat serves to educate landowners, State and local governments, and the public regarding the potential conservation value of an area. This helps focus and promote conservation efforts by other parties by clearly delineating areas of high conservation value for the affected species.” 74 Fed. Reg. at 8647.

For these reasons, we respectfully request that the Service designate critical habitat for wolverine. It would be beneficial to protecting core areas and den sites occupied by wolverine, especially areas outside protected National Parks and Wilderness Area, and assist with the need to maintain connectivity between these core areas. Special attention should be given to areas that are presently unoccupied but essential to the long-term survival and recovery of the species in the face of a warming planet.

5. The Service Should Ensure Recovery Planning Occurs Within A Reasonable Amount Of Time.

Pursuant to Section 4(f) of the ESA, the “Secretary shall develop and implement [recovery] plans . . . for the conservation and survival of endangered and threatened species . . . unless he finds that such a plan will not promote the conservation of the species.” 16 U.S.C. § 1533(f). In preparing recovery plans, the Secretary is to give priority to those listed species that “are most likely to benefit from such plans, particularly those species that are, or may be, in conflict with construction or other development projects or other forms of economic activity.” *Id.* at § 1533(f)(1)(A).

The Service’s *Endangered and Threatened Species Recovery Planning Guidance* (updated June, 2010) explains that the recovery planning process includes three phases. First is the pre-planning phase whereby the Service prepares a recovery outline. The outline is designed to provide interim strategies and goals for recovering the species and lays out how and by whom a recovery plan is to be developed. The recovery outline is designed to “get the ball rolling” for the development of a recovery plan and, as such, is to be completed within 60 days from the date of listing. *Guidance* at 1.5.1. Second is the planning phase which involves the actual writing of the recovery plan, including solicitation and incorporation of comments via peer review and public comment. Final recovery plans “should be completed within 2.5 years of listing.” *Guidance* at 1.5.1.

Under the ESA, each recovery plan shall include: (1) a description of site specific management actions necessary to achieve the recovery goal; (2) measurable criteria (which, when met, would result in a determination that the species be de-listed); and (3) an estimate of the time and costs required to carry out the measures needed to achieve the recovery goal and intermediate steps towards that goal. *Id.* at § 1533(f)(1)(B).

The third phase is implementation of the recovery actions called for in the recovery plan, monitoring of implementation and the effectiveness of the actions, and adaptation of the plan, if necessary.

As explained by the Service, the development and implementation of recovery plans is important because it spells out the variety of actions needed to achieve recovery. “[W]ithout a plan to organize, coordinate and prioritize the many possible recovery actions, the effort may be inefficient or even ineffective.” *Guidance* at 1.1. The prompt development and implementation of recovery plans “ensures that recovery efforts target limited resources effectively and efficiently into the future.” *Id.* Recovery plans are a “road map for species recovery—[they] lay[] out where [the Service] needs to go and how best to get there.” *Id.* As such, recovery plans are “one of the most important tools” to ensure sound decision making throughout the recovery process. *Id.* (emphasis added).

As one of the most important tools for species recovery, it is important that the Service make completing the three phases of recovery planning (outlined above) a top priority. The preparation of a draft recovery outline before listing is certainly a good start but the Service must follow through. And, recovery planning should not be contingent upon or be delayed by efforts to designate critical habitat (such an approach as resulted in over 12 years of delay in preparing a recovery plan for lynx).

We also recommend that, as part of the recovery planning process, that the Service take a hard look at reintroduction programs not only in Colorado but other areas in the contiguous United States that were historically occupied by wolverine, still include suitable habitat (including late spring snow) but area currently unoccupied. This would include Oregon (central Cascades and the Wallowas), Washington (Olympics), California (Sierra Nevada), New Mexico, Utah, and areas in Wyoming (the Big Horns and Wind River Range).

Please note that we are very interested in assisting with, and participating in, any and all future recovery efforts for the DPS.

Thank you in advance for taking the time to carefully review and consider the issues, concerns, and best available science outlined in these comments. If you have any questions or wish to discuss the issues raised in greater detail, please do not hesitate to contact us.

Sincerely,

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