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Public Comments Processing
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Re: Comments by the Society for Conservation Biology¹ – North America Section and Marine Section on the Draft Policy on Interpretation of the Phrase “Significant Portion of Its Range” in the Endangered Species Act’s Definitions of “Endangered Species” and “Threatened Species.”

On behalf of the North America Section and the Marine Section of the Society for Conservation Biology (SCB), we offer the following comments on the “Draft Policy on Interpretation of the Phrase ‘Significant Portion of Its Range’” (hereafter Draft Policy). The Endangered Species Act (ESA) provides U.S. Fish and Wildlife Service (FWS) and National Marine Fisheries Service (NMFS) (collectively the “Services”) with the ability to protect a declining animal or plant species that is threatened or endangered in “a significant portion of its range.” This authority provides the Services with the flexibility to proactively protect declining species *before* they become threatened or endangered with extinction globally, and to restore species that have been extirpated from significant portions of their historic range. SCB has significant concerns with this Draft Policy because it appears to ignore several key principles of conservation biology, and as a result does not meet the best available science mandates contained within the ESA.

As an organization whose members have extensive expertise in the field of conservation biology and other conservation sciences, SCB believes that the Draft Policy should be revised to incorporate the most current and best scientific principles relating to the conservation and restoration of endangered species. If the principles of conservation biology, which we will identify below, are incorporated into a final policy, we believe that the Services will be able to more effectively conserve and restore threatened and endangered species and meet the best science mandates contained in the ESA. In addition, incorporating these principles will make the final policy consistent with existing policies regarding ecosystem management of endangered species, as well as more consistent with the intent of Congress when it passed the ESA.

¹ SCB is an international professional organization whose mission is to advance the science and practice of conserving the Earth's biological diversity, support dissemination of conservation science, and increase application of science to management and policy. The Society's membership comprises a wide range of people interested in the conservation and study of biological diversity. Resource managers, educators, government and private conservation workers, and students make up the thousands of members worldwide in over 140 countries.



EXECUTIVE SUMMARY

As we will describe in detail below, SCB recommends the following changes to the Services' Draft Policy interpreting the phrase "significant portion of its range" to ensure that a final policy will represent the best available science:

- 1) A definition of "significant" should focus primarily on a species' geographic representation within a defined ecoregion or ecosystem unit rather than based on a risk of extinction to the entire species.
- 2) Extirpation from an ecoregion or ecosystem unit, which constitutes part of a species' historic range, provides a justification for finding that a species is endangered in a significant portion of its range.
- 3) The threat of extirpation from that ecoregion or ecosystem unit would provide the justification for finding that such species is threatened within a significant portion of its range.
- 4) A substantial portion of unoccupied historic range can constitute a significant portion of a species' range and can provide a justification for finding that a species is threatened or endangered within a significant portion of its range, rather than the categorical refusal to consider historic range as the Services propose.
- 5) Recovery within an ecoregion or ecosystem unit can be prioritized using existing guidance on setting recovery priorities. This would focus recovery of a species to an ecoregion or ecosystem unit where recovery is feasible, while not requiring that a species be restored to every portion of its former range that is now unoccupied.
- 6) A definition of "significant portion of its range" that focuses on geographic representation, as modern conservation science recommends, requires that the Services modernize their 1996 joint *Policy Regarding the Recognition of Distinct Vertebrate Population Segments Under the Endangered Species Act* to allow a distinct population segment of a species to be based on ecoregion or ecosystem unit boundaries.
- 7) The future hypothetical consequences of listing species based on a particular definition of "significant portion of its range" should not be used as a justification for defining "significant portion of its range" in such a manner as to render the phrase devoid of scientific and practical meaning in the first instance. The Services should therefore remove part one of their Draft Policy: *Consequences of Listing*.
- 8) The Services should develop an integrated policy to fully reconcile the requirements of Sections 4(a), 4(b), and 4(c) of the Endangered Species Act together with the definition of "significant portion of its range" by referring the matter to a panel comprised of representatives nominated by scientific and professional societies as the Act advises the Services to do in Section 4(b)(5)(C) with regard to listing decisions.



SCB has identified three areas of concern where the Draft Policy does not properly incorporate the scientific principles from the field of conservation biology. **First, the Draft Policy proposes that a portion of a species' range is significant only when "its contribution to the viability of the species is so important that without that portion the species would be in danger of extinction."** This definition effectively renders the term "significant portion of its range" (hereafter SPR) redundant— since listing a species as "threatened" throughout its range already covers situations where the loss of a portion would leave the species in danger of extinction. Narrowly defining the term "significant" to only cover situations where the loss of a portion of a species' range would lead to range-wide extinction ignore the simple fact that Congress intended the ESA's concept of endangerment to be broader than the biological concept of extinction risk. Instead the ESA's stated purpose is to "provide a means whereby the *ecosystems* upon which endangered species and threatened species depend may be conserved." 16 U.S.C. § 1531(b), (emphasis added). This broader ecological goal is furthered by the presence of species across their historic range, and therefore the ESA's concept of "significant portion of its range" must imply a geographic component to listing and recovery of endangered species. **SCB recommends that the Services adopt a definition of "significant" that holds when the loss of a portion of species' range would result in the extirpation of that species from a defined ecoregion or ecosystem unit, then that portion is significant to the species and the species must be protected under the ESA.** Although consideration of geographic representation may indeed enhance viability, the FWS must consider the additional benefits independent of viability, which Congress intended the geographic component of listing and recovery to achieve.

Second, the Draft Policy proposes a problematic definition of "range," by taking the position that "loss of historical range cannot be a significant portion of the range...we cannot base a determination to list a species on the status of the species in lost historical range." This approach is highly problematic because any species' conservation status at a given moment is the result of all of the past human activities and natural events that have resulted in its current geographic distribution. **The Draft Policy ignores extensive scientific research regarding the dangers in a shifting baseline approach to conservation,** which underestimates the risks of extinction for a given endangered species, and ignores the fact that the distribution of a taxon is dynamic in time and space. This approach will likely create a perverse incentive to destroy a species' habitat in a race against the clock prior to the listing of such species. In addition, this approach is at odds with existing case law, as well as multiple provisions of the ESA that contemplate efforts to expand the current range of listed species, including the statutory authority to designate critical habitat outside a species' current range and the ESA provisions allowing for reintroducing populations in areas geographically separated from species' existing range. 16 U.S.C. §§ 4(b) & 10(j). The decision that lost historic range cannot constitute a significant portion of a species' range is clearly at odds with past practices of the Services in listing species including the gray wolf (*Canis lupus*), grizzly bear (*Ursus arctos horribilus*), and bald eagle (*Haliaeetus leucocephalus*). **SCB recommends a definition of "range" that gives the Services the flexibility to base a listing decision on lost historic range within an ecoregion or ecosystem unit.** Such an approach would give the Services the ability to recover endangered species in each ecosystem unit where feasible, while not requiring that a species be restored to every portion of its former range.



Taken together, these recommended changes will address another significant flaw in the Draft Policy, which currently does not provide a separate listing threshold for species that are “threatened” with extinction “within the foreseeable future throughout...[in] a significant portion of its range” 16 U.S.C. § 1532(20). An alternative definition based on species extirpation from an ecosystem unit provides the flexibility to consider threats at a much finer scale both spatially and temporally. SCB believes that these threat criteria can easily be based on criteria such as those used by NatureServe that specifically address the risks of extirpation within a portion of a species’ range (Faber-Langendoen et al. 2009). In addition, these first two recommended changes to the Draft Policy provide a path forward for the Services to revise the joint *Policy Regarding the Recognition of Distinct Vertebrate Population Segments Under the Endangered Species Act* (hereafter “DPS Policy”). The 1996 DPS policy contains several significant flaws, and no longer represents the best available science. As such, the DPS Policy exacerbates the statutory tension contained in the ESA between the “significant portion of its range” language and the “distinct population segment” language in the Act. **Instead of reconciling the DPS policy and the Draft Policy on SPR, the Services have taken an approach that will only make these tensions more pronounced by setting the threshold for significant at a very high bar under the SPR Draft Policy. Therefore, SCB recommends changes to the DPS Policy so that ecoregion or ecosystem unit boundaries can be considered as a valid justification for designating a DPS, without requiring that DPS units be disjunct from one another.** While the changes recommended by SCB will mean that DPS units could be defined and informed by a finding that a species is threatened or endangered in an SPR, it would not make the DPS provision equivalent to the SPR authority.

Third, the Draft Policy proposes that when a species is threatened or endangered in a significant portion of its range, then it must be protected range-wide unless the Services are able to identify a legally-valid Distinct Population Segment (DPS), in which case the species will only be listed in that DPS. This position is a reversal from an earlier position adopted by the Department of Interior in 2007 that stated, when a species is threatened or endangered in a significant portion of its range, then it should *only* be listed within that portion of the range (M-37013: The Meaning of “In Danger of Extinction Throughout All or a Significant Portion of its Range,” Mar. 16, 2007, hereafter “M-Opinion”). SCB acknowledges that the language of the Endangered Species Act is ambiguous and difficult to reconcile as to question of what the proper listable entity must be when a species is threatened or endangered within an SPR. Several federal courts have found reasons to support and oppose both alternatives, and past agency listing decisions are equally difficult to reconcile.

Assuming, for the sake of argument, the Draft Policy’s interpretation of the ESA is correct on this point that the duty is to list a species range-wide, then, SCB believes that such an approach would be consistent with the precautionary principle and the scientific principles of conservation biology, including the effect of meta-population dynamics on persistence (Den Boer 1968, Gilpin 1987). SCB notes that protecting species range-wide based on threats within an SPR may result in unintended consequences that may be contrary to Congressional intent under the ESA, and may result in the ESA being applied to protect populations where those protections are not needed. Short of changing the legislative text, the most effective way of



minimizing these unintended consequences will be to revisit the DPS policy itself, as SCB recommends above, so that it works in conjunction with the final SPR policy. Unfortunately, instead of that approach, the Services have expressly proposed adopting a policy that attempts to minimize any potential overlap between the SPR and DPS policies by setting the threshold for “significant” at a very high level. The Services’ justify this course of action on the hypothetical worst-case scenarios of both the economic and regulatory consequences of protecting species range-wide. This clearly conflicts with the mandate in Section 4(b) of the ESA that listing decisions be based solely on the best scientific and commercial data available, not on potential economic, regulatory, or resource allocation concerns which can be fully addressed by using the regulatory flexibility that exists within the remainder of the statute. **Because it is possible to establish a definition of “significant portion of its range” without regard to the possible consequences of potential listings, the Services should simply remove part one of the policy, *Consequences of Listing*.**

Upon withdrawal of part one of the policy (Consequences of Listing), SCB recommends that the Services develop an integrated policy that fully reconciles the requirements of Sections 4(a), 4(b), and 4(c) of the ESA together with SCB’s recommended, scientifically-defensible, definition of “significant portion of its range” by referring the matter to a panel comprised of representatives nominated by scientific and professional societies as the ESA advises the Services to do in Section 4(b)(5)(C) of the Act with regard to listing decisions. Given that the SPR and DPS policies could impact the majority of listing and delisting actions in the future, it is essential that those policies not be adopted without ensuring that they are based on the best available scientific research, knowledge, and data on the conservation and recovery of endangered species. The panel of experts would provide the best substantive scientific knowledge that is available for developing a final policy to reconcile the SPR language with the other relevant sections of the ESA, and provide a clearer procedural basis for asserting that the Secretary is using the best available science as Section 4 requires.



I. THE SERVICES' PROPOSED DEFINITION OF "SIGNIFICANT" IS NOT CONSISTENT WITH THE ESA. THE TERM "SIGNIFICANT" SHOULD FOCUS PRIMARILY ON GEOGRAPHIC REPRESENTATION WITHIN AN ECOREGION.

The Endangered Species Act provides for the listing and protection of endangered and threatened species. 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. § 1533(6). The term "threatened species" means "any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range."

16 U.S.C. § 1533(20). The primary defect of the Services' approach to defining the phrase "significant portion of the range," which is included in both of the statutory definitions above, is the failure to recognize the difference between the harm of a species becoming extinct and the harm of species being extirpated from portions of its range. The authority to protect species that are threatened or endangered throughout their range allows the Services to address the risks of a species becoming extinct. The authority to protect species that are threatened or endangered in a significant portion of its range allows the Services to address the risks of a species being extirpated from a portion of its range, *independent* of whether this loss in range would lead to the extinction of a species.

Congress added the "significant portion of its range" (hereafter "SPR") language to allow the Services to take action *prior* to a species being "*threatened* with worldwide extinction." H.R. Rep. No. 93-412 (July 27, 1973) (emphasis added). A species need not be threatened with extinction to be eligible for protection under the ESA. A species can be protected if it faces extirpation from portions of its range or has been extirpated from portions of its range. The reason that Congress wanted to prevent extirpation is clearly evidenced by the first section of the ESA, in which Congress stated that threatened and endangered species "are of esthetic, ecological, educational, historical, recreational, and scientific value to the Nation and its people." 16 U.S.C. § 1531(a)(3). When a species is extirpated from its range, it is no longer of value to the United States or its people within that portion of the range. In expanding the definition of threatened and endangered species, Congress gave the Services authority to declare "a species endangered within the United States where its principal range is in another country, such as Canada or Mexico, and members of that species are only found in this country insofar as they exist *on the periphery* of their range." H.R. Rep. No. 93-412 (July 27, 1973) (emphasis added). As the Environmental Impact Statement (EIS) that accompanied a bill that was nearly identical to the ESA in 1972 stated, the SPR phrase would:

provide the Secretary with the authority to protect a population unique to some portion of the country without regard to its taxonomic status, or a population that is now endangered over a large portion of its range even if the population inhabiting that portion of the range is not recognized as a distinct subspecies from a more abundant population occurring elsewhere.

Environmental Impact Statement accompanying H.R. 13111, 92nd Congress (1972).



It is clear that the Services' proposed definition in the Draft Policy for "significant" is not consistent with the text of the ESA or the intent of Congress with respect to the SPR authority. At its core, the Services' approach is flawed because it equates "significant" only with "biological viability," in other words, global extinction. But the word "significant" modifies the larger term "portion of its range," meaning that the proper inquiry the Services should be conducting is one that focuses on *both* viability *and* geographic representation. As one court has noted, the word "significant" means "noticeably or measurably large amount," and that the SPR inquiry should consider large geographic areas of a species' range. *Defenders of Wildlife v. Norton*, 239 F. Supp. 9, 19 (D.D.C. 2002). The Services' decision to completely ignore geographic representation is inconsistent with their past practices and the language of the ESA. This decision does not incorporate the best available science with respect to analyzing the risks and harms of species extirpation. Accordingly, SCB proposes a definition of significant that properly considers the geographic component of this inquiry by assessing a species' presence and viability within an ecoregion or ecosystem unit.

A. The Proposed Definition of "Significant" Does Not Provide a Substantive Distinction Between a Species Being Threatened Throughout its Range and Being Threatened or Endangered Within a Significant Portion of its Range.

The Draft Policy proposes that a species' range is significant only if the Services determine that "without that portion, the representation, redundancy or resiliency of the species—or the four viability characteristics used more commonly by NMFS—would be so impaired that the species would have an increased vulnerability to threats to the point that the overall species would be in danger of extinction." By the Services own admission, this is a "relatively high" threshold that will limit the possible scenarios where the SPR authority will be utilized. Unfortunately, this threshold renders the SPR phrase superfluous. If a "significant" part of a species' range means only the portion whose loss would render the entire species in danger of extinction, there would be no need to include the clause "significant portion of its range" in the definition of an endangered species. By conflating the two distinct ecological concepts, (global) extinction and (local) extirpation, the Services weaken the protective authorities of the ESA by merging the SPR authority with the authority to protect a species that is threatened throughout its range. To understand why this approach is fundamentally flawed and does not represent the best available science, it is necessary to properly define extinction and extirpation.

A species is extinct when the last living individual of that species has been eliminated throughout its global range, and there is no restoration potential from captive stocks. *Conservation Status Assessments: Factors for Assessing Extinction Risk*, NatureServe 2009. The Services have removed species from the list of threatened and endangered species which have become extinct. For example, the Caribbean Monk Seal (*Monachus tropicalis*) was declared extinct in 2008 because there had been no confirmed sightings of Caribbean monk seals anywhere in the world since 1952. 73 FR 63901, Oct. 28, 2008. The ESA is clearly designed to prevent extinction and allows the Services to protect species at currently at risk of extinction as well as those threatened with extinction in the foreseeable future. But, the ESA allows the Services to protect species that are "in danger of extinction throughout...a significant portion of



its range.” This phraseology does represent somewhat of an oxymoron given the modern, science-based definition of the term extinct. However, despite this poor phrasing, it is clear from the rest of the text of the ESA and the legislative history that Congress clearly intended the Services to possess the authority to protect and restore species that are at risk of *extirpation* from significant portions of their range, not just species at risk of global extinction. *Defenders of Wildlife v. Norton*, 258 F.3d 1136 (9th Cir. 2001). Most critically, the Services may utilize this authority to protect a species at risk of extirpation, *regardless* of its risk of global extinction. The Draft Policy fails to recognize this important point, and as a result violates the plain meaning of the ESA. In order to understand why the FWS policy violates the ESA, it is necessary to carefully examine the definition of a threatened species, and to understand how extirpation from a portion of a species range impacts a species.

A species is Presumed Extirpated when it is “not located despite intensive searches of historic sites and other appropriate habitat, and virtually no likelihood that it will be rediscovered.” NatureServe 2009. This definition does not include any consideration of how the extirpation of a portion of its range would impact the overall global viability of the species because the focus is on a geographic subset of the species’ range. Instead, the decision to assess the risk of extirpation is defined by the type of jurisdiction that one wishes to assess (i.e. a species’ presence in a nation, state, national park, or ecoregion). Under the NatureServe assessment system, a species’ risk of extirpation does not then require any particular conservation rank for extinction risk. The Draft Policy does not use this approach, and therefore does not represent the best available science.

Instead, what the Services propose is that the risk of extirpation to a species must increase the risk of extinction for that species in order to justify protecting the species under the ESA. Under the Draft Policy, a portion of a species’ range is significant if it “is so important to the species as a whole that its hypothetical loss would render the species endangered” range-wide. The fatal defect in this approach becomes clear when the hypothetical becomes a real-world application of the Draft Policy. As the Services explain:

Because a determination of significance means that, without that portion, the species would be endangered throughout its range, a determination that the *species is in fact likely to be without that portion* (that is, likely to be extirpated from it) within the foreseeable future, *is also a determination that the species is likely to become endangered throughout its range* in the foreseeable future. The species would therefore *currently also meet the definition of threatened throughout its range*.

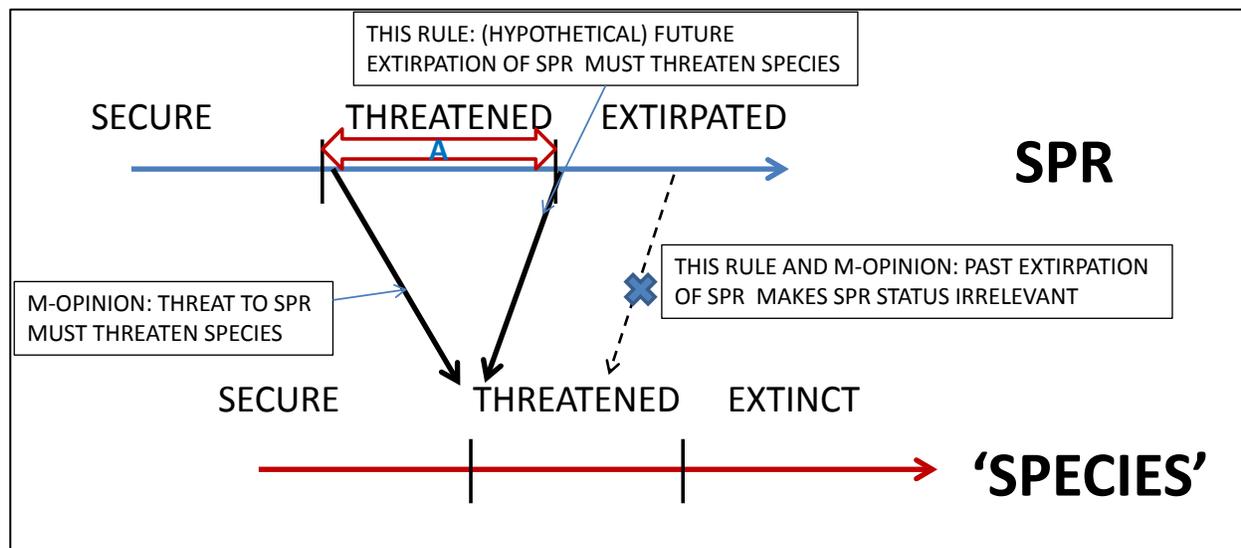
Simply put, the Services admit that under their proposed standard, a factual finding that a species is threatened or endangered in an SPR is *equivalent* to a finding that it is threatened rangewide. Thus, it becomes clear that while the Services may be able to maintain some unique and independent meaning in theory for the term “significant portion of its range,” as soon as this Draft Policy is applied to a particular set of facts for a particular species, the independent meaning of the term falls away. In the limited situations where a species could be listed because of threats within an SPR, the Services would already have to list the species as threatened or



endangered range-wide. By tying the risks of regional extinction to an assessment of extinction risk, the Services have deprived the SPR of substantive, independent meaning.

We provide Figure 1 below to illustrate how the Services' have improperly conflated extinction risk with extirpation risk, and to show how the current approach still follows the flawed approach within the M-Opinion, which has been rejected by the courts. Under the 2007 M-Opinion a portion of a species' range is significant only if the present threats within in an SPR are of sufficient magnitude to threaten the species as a whole at the present. Under the currently proposed SPR policy, an area would constitute an SPR if the hypothetical future extirpation from that area would threaten the species as whole in the future. Thus, there is a slight difference in analytical approaches between the M-Opinion and the Draft Policy. However, both make the critical error or conflating extirpation with the threat of extinction, instead of analyzing extirpation as an independent basis for listing under the ESA. Additionally, as discussed below, both the M-Opinion and currently proposed policy are similar in that past extirpation of a species from a region makes that region ineligible per se for the region to be considered a Significant Portion of its Range. The shortcomings of both major aspects of the proposed policy derive from ignoring that species extirpation in a geographic region is generally a reversible temporal process, and that past, current and potential future stages of this process are relevant to SPR determinations.

Figure 1. Comparison of the how the process of extirpation within a SPR determines the status of a species under the 2007 M-Opinion and the 2012 Draft Policy.



B. The Services' Misinterpret and Undercut the Three R's of Conservation: Representation, Redundancy, and Resiliency

To further illustrate the problems with Draft Policy's approach, it is important to analyze the way the Services propose to consider the representation, redundancy, and resilience (following Shaffer and Stein (2000)) of a species in context of an SPR. Those three concepts are



widely recognized to be fundamental to the long-term success of conserving species. The Draft Policy states that the only scenario in which a species could be listed because of threats within an SPR is if the loss of a portion of the species' range would implicate one of these factors to such a degree that it would put at risk the global viability of such species. In other words, the representation of a species within a portion of the range is *only* significant if the loss of representation would lead to a greater risk of extinction. The redundancy contained within a portion of a species' range is *only* significant if the loss of such redundancy places the species at risk of extinction. The resiliency contained within a portion of a species' range is *only* significant if the loss of that resiliency would lead to extinction. This approach does not represent the concept of representation described in Shaffer and Stein (2000). Those authors defined representation as a species' presence across the diversity of ecosystems inhabited by the species and by the species role in ecosystem processes. Representation applies to whether the species' absence in a portion of its range would have *significant ecological consequences* or whether a given portion of a species' range includes ecosystem types not found elsewhere in the species' range, rather than to a population's contribution to the viability of the entire species via, e.g., genetic diversity. In other words, the consequences of a species' extirpation are not valued based on the extinction risk that might accompany a loss in representation.

Properly considering a species' geographic representation is the most important factor in assessing which portions of a species' range is in fact significant. The Draft Policy's approach of connecting geographic representation (i.e. the risk of extirpation) to the species' risk of extinction does not represent the best available science. The most appropriate way to remedy this problem would be to establish a new definition of "significant" that is not exclusively connected to a species' risk of global extinction or overall biological viability.

C. The Proposed Definition of Significant is Not Consistent With the Services' Prior Actions to List Species and is Not Consistent with Congressional Intent Regarding the Protection of Endangered Species.

Focusing exclusively on biological viability is not consistent with Congressional intent underlying the Endangered Species Act of 1973 (ESA). The ESA was the third in a series of laws enacted in the late 1960s and early 1970s aimed at the protection of endangered species. The first two laws defined endangered species narrowly, and limited the protections of the law to only those species facing global extinction. Extending the legal protections of the ESA to a species that were threatened or endangered only in a significant portion of its range marked "a significant shift in the definition in existing law which considers a species to be endangered only when it is threatened with worldwide extinction." H.R. Rep. No. 412, 93rd Cong., 1 Sess. (1973).

As was explained by Senator Tunney during the debate on the passage of the 1973 ESA:

An animal might be 'endangered' in most States but overpopulated in some. In a State in which a species is overpopulated, the Secretary would have the discretion to list that animal as merely threatened or to remove it from the endangered species listing entirely while still providing protection in areas where it was threatened with extinction. In that portion of its range where it was not threatened with extinction, the States would have full authority to use their management skills to insure the proper conservation of the species...Under existing law...a species must be



declared 'endangered' *even if in a certain portion of its range, the species has experienced a population boom*, or is otherwise threatening to destroy the life support capacity of its habitat.

The ESA allows a species to be listed as threatened or endangered when “there are major geographical areas in which it is no longer viable but once was. Those areas need not coincide with national or state political boundaries, although they can.” *Defenders of Wildlife*, 258 F.3d 1145. Nothing in the legislative history would suggest that a risk to the biological viability of a species was a prerequisite for determination that a species was threatened or endangered in an SPR. Senator Tunney’s remarks strongly suggest that the ESA allows the Services to consider a species’ relative abundance within portions of its range, regardless of overall viability.

There are four, clear, historical examples of how the FWS has protected species that have been extirpated from a significant portion of their ranges. In 1975, the FWS listed the grizzly bear (*Ursus arctos horribilus*) throughout the conterminous 48 states because “the range of the grizzly bear, which at one time was much of the western United States, is now confined to isolated regions in Montana, Idaho, and Wyoming.” 40 Fed. Reg. 5, Jan. 2, 1975. This listing decision made no mention of the overall viability of the species, but focused instead on its extirpation from its U.S. Range. At the time of listing, there were large, healthy populations of grizzly bears in Canada and Alaska, and the subspecies was never at risk of extinction.

Similarly, after the passage of the 1973 ESA, the FWS re-classified the bald eagle (*Haliaeetus leucocephalus*) as endangered throughout the conterminous 48 States except in Washington, Oregon, Minnesota, Wisconsin, and Michigan, where the eagle was listed as threatened (41 Fed. Reg. 28,525, Jul 12, 1976). This listing action superseded the earlier protection of the bald eagle under the Endangered Species Preservation Act of 1966, in which the bald eagle was listed an endangered species throughout its historic range (32 Fed. Reg. 4,001, Mar. 11, 1967). In the 1976 listing revision, the protections of the ESA were not extended to bald eagles living in Alaska, where healthy and secure populations existed. In 1978, gray wolves (*Canis lupus*) were also reclassified as endangered throughout the conterminous 48 States following the passage of the 1973 ESA (43 Fed. Reg. 9,607, Mar. 9, 1978). This reclassification superseded the FWS’s earlier decisions to list as endangered only the putative timber wolf subspecies (*Canis lupus lycaon*) in 1967 and the putative Northern Rocky Mountain wolf (*Canis lupus irremotus*) in 1973 while leaving all other wolf populations unprotected. Finally, in 1992 the FWS protected the marbled murrelet (*Brachyramphus marmoratus*) in California, Oregon, and Washington despite being unable to identify a valid DPS to protect at the time of listing. 57 Fed. Reg. 45,328, Oct. 1, 1992. The marbled murrelet’s range extends from California north to the Aleutian Islands of California, and here again the FWS listed the species even though healthy population existed in Alaska.

For each of these four species, the FWS afforded the protections of the ESA because each of them were threatened with extirpation from a significant portion of their range or had been extirpated from a significant portion of their historic ranges. Equally importantly, these historical cases clearly illustrate that a species can and should be protected under the ESA even when the biological viability of such species is never in any doubt. While the rationale for listing these four species was not fully explained in these early listing determinations, it is clear that the



FWS considered other factors beyond global viability when it listed each of these species due to threats in a significant portion of its range. It is also clear that the *most likely* authority that the FWS was using to list these at least three of these species was the authority contained in the SPR provision of the ESA, given the fact that between 1973 and 1978, the Services did not have the DPS option at their disposal for listing species. The Services may claim that these three listings represent “de facto” DPS units, but that ignores the undisputed historic fact that the only authority that the Services could possibly have used at the time to protect these species was the SPR authority.

It is also clear from these four listing decisions that biological viability did not provide the justification for protecting the four species discussed above, because none of them were at risk of global extinction. Instead, these species were protected in order to accomplish other goals, namely the restoration and recovery of these species within their historic range. The ESA provides the Services to protect species in these situations because the ESA’s stated purpose is to “provide a means whereby the *ecosystems* upon which endangered species and threatened species depend may be conserved,” not merely to prevent extinction. 16 U.S.C. § 1531(b) (*emphasis added*). The ESA’s concept of “significant portion of range” implies an additional geographic component to recovery. Although consideration of this component may indeed enhance viability, the FWS must also consider the additional benefits, independent of viability, that Congress intended the geographic component of recovery to achieve. An exclusive focus on the overall viability of listed species without regard to their ecological importance throughout their geographic distribution will result in the development of listing and recovery criteria with fundamental shortcomings. Preserving a species within an ecosystem provides significant benefits both to the ecosystem it is conserved within and to the species itself. There is a large body of evidence on the role of “keystone” species in maintaining ecosystem structure and processes (Power et al. 1996). There is also a great deal of information on the role that top predators play in affecting ecosystem functions (Estes et al. 2011).

These ecosystem-level benefits are in addition to significant benefits to the species itself, such as enhanced genetic diversity and “spreading of risk” from stochastic events (Den Boer 1968). Thus, conserving ecosystems that endangered species depend upon must be considered as a valid reason for protection using the SPR authority. Accordingly, SCB recommends that the Services adopt a definition of “significant” that focuses primarily on geographic representation in an ecoregion and its risk of extirpation within an ecoregion or ecosystem unit as the basis for significance.

D. A Definition of ‘Significant’ Should Be Based on a Species’ Geographic Representation Within an Ecoregion or Ecosystem Unit.

The Services’ repeatedly make the error of conflating a species’ extinction risk with its risks of extirpation from a particular area. For example, the draft policy states, “it is important not to use a threshold for ‘significant’ that is too low (e.g., a portion of the range is ‘significant’ if its loss would result in any increase in the species’ extinction risk, even a negligible one).” However, if the loss of a portion of a species’ range results in an appreciable change in the conservation status of the species as a whole, then the species is at a minimum, *threatened*



range-wide. Therefore, the proper analytical inquiry for SPR should be: When is the extirpation of a species from a portion of its range a sufficient justification, *in of itself*, to warrant listing under the ESA? SCB recommends that the correct answer for this question should be that a portion of the range is significant when its loss would mean that a species is no longer extant within an ecoregion or ecosystem unit. Under this alternative approach, a species would be endangered within a significant portion of its range if, without that portion, the species would be extirpated from one or more ecoregions or ecosystem units. A species would be threatened within a significant portion of its range, if the threats to that portion are of such magnitude that the species would be in danger of extirpation from one or more ecoregions or ecosystem units within the foreseeable future. This approach better conforms to the purposes of the Act, is more consistent with judicial interpretations, and harmonizes the Services listing activities with several extant or existing policies on ecosystem management. By integrating consideration of a species' geographic representation and its biological viability, SCB's proposed approach overcomes the limitations of the draft policy outlined above.

1) Background on Ecoregion Classification Systems.

Over the last two decades, mapped classifications of patterns in biodiversity have become prominent tools for conservation planning. In 2001, Olson proposed a classification system that divided up the terrestrial land masses of the planet into 867 ecoregions representing distinct biotic assemblages. Olson *et al.* 2001. This classification system was a noted improvement on earlier classification systems which only divided the Earth into extremely coarse biodiversity units, including biomes and realms. Since Olson, ecoregions have been identified for freshwater systems (Abell *et al.* 2008) and marine systems (Spalding *et al.* 2008) throughout the world.

Similarly, in 1996, the FWS adopted a formal policy to utilize an ecosystem approach for the conservation of fish and wildlife. Fish and Wildlife Manual Chapter 52, April 19, 1996. The FWS utilized the U.S. Geological Survey's Hydrologic Unit Map as the foundation for its ecosystem planning strategy and divided the United States into 53 "ecosystem units" based on major watersheds, vegetation cover types, physiography (physical geography), optimum size, and the amount of land area that could be effectively addressed given management and resource constraints. Today, the FWS state-level and regional offices all incorporate ecosystem management by considering the conservation needs within the ecosystem units within their respective management spheres. The FWS has already spent significant resources delineating ecosystem units throughout the United States, and therefore, from a resource efficiency standpoint, utilizing these ecosystem units as the basis for SPR determinations would likely be an effective approach for listing decisions.

SCB is not proposing that one of these land-classification systems is necessarily a better fit than the other for listing species under the SPR authority. Indeed there are additional classification systems that could also be utilized. In recent years, the FWS has established the Landscape Conservation Cooperatives initiative, which divides the United States into large landscape-level planning units. Several non-governmental organizations, including the Nature Conservancy and the American Bird Conservancy, have conducted planning efforts to identify



landscape-level ecosystem units. As we describe below, there may also be situations where there is sufficient species-specific data available to allow analyses of geographic representation using geographic units that better represent geographic variation within a species than do ecoregions. What is most important is that these ecoregion units provide a general starting point as an appropriate scale for properly considering whether to protect a species based on threats within an SPR. For the remainder of SCB's comments, we will use the ecosystem unit as the default unit to assess "significant" portions of the range, recognizing that there should also be a degree of species-specific flexibility in any listing determination under the ESA. However, we also note that there may be administrative efficiencies if the Services were to adopt the ecosystem units as the default unit, since the Services already have invested significant resources delineating these units, and already make other non-ESA management decisions based on these units. Fish and Wildlife Manual Chapter 52, April 19, 1996 SCB

2) Implementation of SCB's Recommended Approach for Assessing SPR Based on a Species' Representation in an Ecosystem Unit.

SCB recommends that, if a species' global range covers two or more ecosystem units, then SPR could provide an independent basis for protection under the ESA where the species is at risk of extirpation from one or more ecosystem units. Under this approach, a species would be endangered within a significant portion of its range if, without that portion, the species would be extirpated from one or more ecosystem units. A species would be threatened within a significant portion of its range, if the threats within a portion of its range are of such magnitude that the species would be in danger of extirpation from one or more ecosystem units within the foreseeable future. SCB offers a few scenarios in order to illustrate how this proposed interpretation of SPR would work:

- If a species' entire global range was only located within one ecosystem unit, the formal SPR analysis would not apply. As will be discussed below, given the average size of ecoregion and ecosystem units, it is likely that a species restricted to just one ecosystem unit would require listing rangewide if there were significant threats in any portion of its range. The Distinct Population Segment policy could still provide an option to the Services to list portions of a species' range that meet the criteria outlined in the DPS policy where threats were geographically concentrated.
- If a species' global range covered two ecosystem units, then the SPR analysis would be utilized to determine if the threats in either ecosystem unit were of sufficient magnitude that the threatened portion required protection under the Act.
- If a species' global range covered more than two ecosystem units, then the SPR analysis would be utilized to determine if the threats in any ecosystem unit were of sufficient magnitude that the portion required protection under the Act. So long as sufficient threats exist in any ecosystem unit, the species would be protected under the Act.
- If a species' global range was primarily outside the United States, but a portion of the range existed in the United States, the SPR analysis would be utilized to determine if the threats in within the U.S. portion of an ecosystem unit were of sufficient magnitude that the portion should be protected under the Act. The Services would still retain the ability to list species wholly outside US territory following either approach—listing range-wide



or based on threats within an SPR. For example, elephants in different parts of Africa might one day be listed as endangered or threatened based on their conservation status within different ecosystem units in Africa. Such fine-scale distinctions might help guide the distribution of U.S. foreign aid and capacity building efforts.

Under SCB's approach the Services would determine the risks of extirpation, based on the five statutory listing factors of Section 4(a)(1) of the ESA, within each relevant ecosystem unit. This type of assessment is recommended by NatureServe,² which allows for sub-global assessments of a species' conservation status. By doing assessments in this manner, the Services would still be considering viability of the species, but at the *proper geographic scale*. SCB also recognizes that, utilizing this approach, there may be situations where 99% of a species' range naturally falls in one ecosystem unit, and that 1% may fall in a separate ecosystem unit. In these situations, there may or may not be conservation benefit to protecting an outlying population that lives in a different ecosystem unit from the rest of the species. SCB agrees with the Draft Policy that, at some level, "each analysis would be case specific" and that "administering many portions of the Act likewise ultimately rely on a degree of professional judgment, which is to some degree inevitable." However, SCB also notes that peripheral populations do in fact in most cases have significant conservation benefits both to the species and to the ecosystems, particularly in times of significant changes in climate, weather patterns, and emerging stressors such as invasive species. Requiring the Services to consider these peripheral populations based on either the SPR or DPS policy may have sufficient conservation benefits in the long-term that outweigh any administrative efficiencies of ignoring peripheral populations in the short-term.

3) Justification for an Ecosystem unit-based Approach to SPR.

Under SCB's recommended approach, if a species' entire global range was only located within one ecosystem unit or other appropriate ecosystem unit, a formal SPR analysis would not apply to that species; instead a range-wide listing of the species, subspecies or DPS unit would provide the proper means of affording it protection under the ESA. *See* Section II, Part D. The use of the SPR authority makes the most logical sense for wide-ranging species, and an examination of the rare occasions that the Services have used the SPR authority (bald eagle, grizzly bear, gray wolf, and marbled murrelet), demonstrates that SPR is most applicable to wide-ranging species. This approach recognizes that a species' extinction risk is never zero, and that while an incremental increase in extinction risk may be of conservation concern, the Services must be able to draw a line somewhere so that they do not have to consider an infinite number of ecosystem divisions when assessing what is potentially an SPR of such species. SCB acknowledges that this is, in part, a normative policy decision (Vucetich et al. 2006). However, this approach is consistent with modern species conservation-status assessments for narrowly-distributed endemic species, which hold that when a range-restricted species faces conservation

² SCB notes that as early as the Endangered Species Conservation Act of 1969, Public Law No. 91-135, Congress has looked favorably on the approach used by the IUCN Red List. H.R. Rep. No. 382, 91st Cong., 1st Sess. 6 (1969). NatureServe is the domestic counterpart to the IUCN Red List, which the Services do consider on an irregular basis in their listing decisions. Consistent application of the principles contained in the NatureServe assessment system would demonstrate that the Service is considering seriously best available scientific data and analysis when considering whether to protect species under the Act.



threats, it should be classified as “vulnerable” range-wide with respect to its extinction risk. IUCN 2001 and NatureServe 2009. Therefore, while this is a normative decision to some extent, SCB believes that this approach is still based strongly on the best available science.³

As explained above, the Services’ proposed definition of “significant” does not represent the best available science because it fails to recognize SPR as an independent basis for protecting a species. The “threatened” range-wide designation already allows for protecting a species when the loss of a portion would increase its overall extinction risk. Therefore, the Services must determine at what scale a species’ range becomes sufficiently large that threats within an SPR *become distinct and independent* from the threats that might otherwise implicate a species’ global viability. For example, a species with a global range of over a million square kilometers, which suffers a reduction in range of 30%, will likely have a very different conservation status than a range-restricted species that suffered a similar decline in range, like the Mount Graham red squirrel (*Tamiasciurus hudsonicus grahamensis*), which has a global range of less than 100 km² inside one National Forest in Arizona. 51 Fed. Reg. 18630, May 21, 1986. It makes little sense to consider which portions of the squirrel’s range are “significant” because *all* portions of a species with such a limited range are important to the survival of that species. Thus, if a threat to a species like the Mount Graham red squirrel were to become apparent in a significant portion of its range, it would be threatened or endangered range-wide with extinction. This is the reasoning that underlies the IUCN and NatureServe species conservation status assessments. Under the IUCN Red List Criteria, a species qualifies as critically endangered when its range (“extent of occurrence”) is less than 100 km²; a species qualifies as “endangered” when its range is less than 5,000 km²; and “vulnerable” when its range is less than 20,000 km² (assuming that the species does in fact face at least one other threat such as habitat fragmentation or a continued decline/extreme fluctuations in population size, area of occupancy, or mature individual). NatureServe follows a similar approach, declaring a species “critically imperiled,” “imperiled,” or “vulnerable” based on similar range extent thresholds. Thus, if the Services are utilizing the best available science for range-restricted species, then they should conclude that threats within a significant portion of any range-restricted species’ range will nearly *always* trigger a finding that the species is threatened or endangered *range-wide*.

Accordingly, it is critical that the Services determine an appropriate threshold, in which a species’ range is sufficiently large that threats within an SPR *become distinct and independent* from the threats that might otherwise implicate a species’ global viability. The IUCN Red List and NatureServe utilize a 20,000 km² global range extent threshold as a cutoff for finding that a species is “vulnerable” to extinction (assuming that one other threat criteria is met). Past this threshold, the range extent criterion no longer provides justification for assessing a species as vulnerable. BirdLife International has recommended a 50,000 km² threshold for classifying range-restricted endemic species that may be intrinsically at risk of extinction. (Statterfield et al.

³ Normative and scientific judgments need not conflict with one another. Congress and the Parties to the treaties that the ESA implements have already made the foundational normative judgments that species and the ecosystems on which they depend should be protected, and that the best available science must be used to list those that are threatened and where. It is for the Services and the courts reviewing their work to determine the best available science and how to deploy it in ways most faithful and effective in pursuit of that national and international norm of conserving biological diversity.



1998; Terborgh and Winter 1983). In other words, once a species' global range exceeds a certain threshold, then range no longer becomes a triggering factor for a finding of endangerment. This does not mean that other factors could not lead to an endangerment finding, just that *range by itself* cannot. SCB concludes based on this approach, that at this order of magnitude for range, that the SPR language takes on independent meaning from range-wide endangerment. Since the general size of ecosystem units falls within this same order of magnitude of range, it may be appropriate to use ecosystem units as the proper scale for assessing SPR.

For species that have a limited global range below these general thresholds, SCB concludes that any threat that is of sufficient magnitude in a significant portion of its range would *necessarily* trigger a finding that a species must be protected range-wide. This approach retains some flexibility, and does not tie the Services to an exact numeric threshold based on square kilometers or percentage of overall range, both of which have been rejected by the Ninth Circuit in *Defenders v. Norton*. By focusing on geographic representation within an ecosystem unit, this approach avoids the problem of the SPR being utilized to protect potentially insignificant portions of a species' range, as was most famously explained in a 1979 report to Congress by the General Accounting Office (GAO) that the SPR language might lead to the listing of "squirrels in a specific city park," even if squirrels were more abundant elsewhere. *Endangered Species – A Controversial Issue Needing Resolution* 52, 58 (GAO Rep. CED 79-65, 1979).

4) An Ecosystem Unit Assessment Provides for a Meaningful Distinction Between the Concept of Endangered in a Significant Portion of the Range and Threatened in a Significant Portion of the Range.

The Endangered Species Act defines "endangered species" differently than it defines "threatened species." The definition of threatened species is "any species which is likely to become an endangered species *within the foreseeable future* throughout all or a significant portion of its range." 16 U.S.C. § 3(20). By including a temporal component in the definition of threatened species, Congress was clear that a species does not need to face the same severity or immediacy of threats to qualify as endangered as it would to qualify as a threatened species. The Draft Policy decided against incorporating the concept of "being likely to become in danger of extinction" in order to "promote a simpler, more straight-forward definition and to avoid the added complexity of the temporal component." This policy choice simply does not represent the best available science or a valid interpretation of the ESA. Modern risk assessment tools, including the NatureServe Conservation Status Assessment and the IUCN Red List Assessment allow for sophisticated quantification of extinction risk including a temporal component. In fact, the FWS itself uses both the NatureServe and IUCN to prioritize candidate species in order to assess extinction risk.⁴ Similarly, the recent listing of the polar bear (*Ursus maritimus*) as a threatened species was based on a population analysis over a three-generation, 48-year time period, following the IUCN Red List criteria for assessing population declines. 73 Fed. Reg.

⁴ See 76 Fed. Reg. at 66,380 Oct. 26, 2011 ("species with the highest IUCN rank, the highest Heritage rank, the highest Heritage threat rank...[have] the highest priority to receive funding to work on a proposed listing determination.").



28,212, May 15, 2008. These examples indicate that the Services do indeed possess the expertise to include a temporal component in a listing analysis. Therefore, there is no reason why the Services cannot include a temporal analysis using the best available science in any final policy for SPR.

SCB recommends two separate thresholds for significance: (1) an endangered threshold where the threats to a species place it at risk of extirpation or extinction, and (2) a threatened threshold that includes a temporal component as required by the text of the ESA. Under this approach, a species would be endangered within a significant portion of its range if, without that portion, the species be extirpated from one or more ecosystem units. A species would be threatened within a significant portion of its range, if the threats to that portion are of such magnitude that the species would be in danger of extirpation from one or more ecosystem units within the foreseeable future. Conducting an assessment of a species' conservation status within a defined ecosystem unit is no more difficult than conducting a status assessment of the species over all of its range. For example, the NatureServe conservation status assessment provides an entirely different set of criteria for assessing a species within a defined unit, at a smaller scale than its global range. SCB recommends that this conservation assessment methodology guide the evaluation of a species within a defined ecosystem unit.

5) An Ecosystem unit-based Approach Provides for the Proper Protection of a Species' Genetic Diversity Across its Range.

Because the ESA does not prescribe quantitative viability thresholds, Carroll et al. (2010) concluded that "for the vast majority of species of concern, the best available quantitative estimates of extinction risk have limited utility in guiding listing decisions or development of recovery criteria...general knowledge of genetic viability does not allow one to infer the level of genetic diversity necessary for viability of a specific population." Because adaptive potential is a hedge against unknown future changes in environment, and most genetic variation contributes incrementally to adaptive potential, it is difficult to identify a strict threshold as to how much diversity is enough diversity. Given this inherent uncertainty, Carroll et al. (2010) concluded that geography may be a more practical surrogate for direct analysis of genetic viability. Thus, an additional benefit of properly considering SPR in the context of representation within an ecosystem unit is that "a species [that] is well distributed throughout its historic range (i.e., securely occupies all but an insignificant portion of its range) will generally correspond with the conditions necessary for genetic viability."

Thus, protection across a species' geographic range at the ecosystem-unit scale should in most cases provide for sufficient clinal⁵ diversity, which may in turn result in sufficient genetic diversity for a given threatened or endangered species. As mentioned above, where sufficient species-specific data is available, other types of ecological units may be more relevant than ecosystem units (Carroll et al. 2010) to ensure that full genetic diversity is maintained. The overriding goal of the SPR inquiry should be the identification of geographic units that are

⁵ Clinal diversity is the gradual change in certain characteristics exhibited by members of a series of adjacent populations of organisms of the same species.



relevant to the species being assessed based on systematic variation in niche among individuals of the listed unit. Delineation of geographic units for a particular listed entity can be linked to consideration of genetics via methods that correlate genetic population structure with geographic or ecological factors (Geffen et al. 2004; Carmichael et al. 2007). This information may be also be derived from studies of regional contrasts in habitat use or diet. Distribution of suitable habitat and their divisions by regions of primarily unsuitable habitat may also suggest appropriate geographic divisions of a species' range in situations where finer-scale assessments are appropriate.

6) Harmonizing an Ecosystem unit-based Approach to SPR with Existing FWS and NMFS Policies.

Utilizing an ecosystem unit-based approach for assessing SPR would also result in administrative efficiencies and other implementation benefits for the Service. As stated above, the FWS has already devoted significant resources in dividing the United States into "ecosystem units." This mapping effort was part of a larger ecosystem management policy adopted in 1996, which recognized that an ecosystem approach would be a "more effective way to address the Service's mission and its extensive array of statutory responsibilities" including the Endangered Species Act. Under this approach, management decisions would be based on natural, ecologically-defined boundaries, rather than on artificial boundaries that do not consider the biological factors. Prior to this policy, in 1994, the FWS and NMFS adopted an *Interagency Cooperative Policy for the Ecosystem Approach to the Endangered Species Act*. 59 Fed. Reg. 34,274, Jul. 1, 1994. This policy stated that "Species will be conserved best not by a species-by-species approach but by an ecosystem conservation strategy that transcends individual species. The future for endangered and threatened species will be determined by how well the agencies integrate ecosystem conservation with the growing need for resource use." Similarly, NOAA has devoted significant resources to ecosystem management, including the mapping of large marine ecosystems and other ecosystem unit planning efforts. See e.g. *Making "Ecosystems" Part of NOAA's Shared Vocabulary*. Report to the NOAA Executive Panel. 2003. Therefore, if properly implemented, the approach recommended by SCB would allowing listing determinations to integrate more fully with other ecosystem-management tools already embraced by the Services.

7) An Ecosystem Unit-Based Approach is Consistent With Past Listing Decisions of the Services.

Analyzing the threats to a species at the ecoregion or ecosystem unit level is consistent with multiple listing actions by the FWS and NMFS. For example, during the FWS's evaluation of the Cactus Ferruginous Pygmy-Owl (*Glaucidium brasilianum cactorum*), the Service evaluated the threats to the owl in the Sonoran desert ecoregion, concluding that habitat fragmentation was extensive, "with only about two percent of the ecosystem unit remaining intact... This has the potential to limit pygmy-owl movements and dispersal, exacerbating the effects of small, isolated populations." 76 Fed. Reg. 61,856, Oct 5, 2011. In its emergency listing of the Miami blue butterfly (*Cyclargus thomasi bethunebakeri*), the FWS concluded that sea level rise is "the largest climate-driven challenge to low-lying coastal areas and refuges in the



subtropical ecoregion of southern Florida” and represents a major threat to the blue butterfly. 76 Fed. Reg. 20,918, Aug. 10, 2011. In a 12-Month Finding on a petition to delist the Coho salmon (*Oncorhynchus Kisutch*) south of San Francisco Bay, the NMFS reviewed the threats to this Evolutionarily Significant Unit of salmon. In the review, the NMFS noted that several creeks had similar characteristics to the Coast Range ecoregion, which is found further north. Because of these similarities, NMFS actually extended the range of the salmon based on ecoregion similarities, rather than delisting the species. 76 Fed. Reg. 6,383, Feb. 4, 2011. In its 12-Month Finding to list the pygmy rabbit (*Brachylagus idahoensis*) as Endangered, the FWS reviewed the threats to the species based on the three distinct ecoregions the rabbit occupied, Central Basin and Range, Wyoming Basin, and the Wasatch and Uintah Mountain, each of which “vary in latitude, elevation, precipitation, and geologic history.” 75 Fed. Reg. 60,516, Sept. 30, 2010.

In a 12-Month finding to list the upper Missouri River DPS of arctic grayling (*Thymallus arcticus*), the FWS recognized that these grayling “occur in a temperate ecoregion distinct from all other Arctic grayling populations worldwide, which occur in Arctic or sub-Arctic ecoregions dominated by Arctic flora and fauna.” FWS noted that:

Occupancy of Missouri River Arctic grayling in a temperate ecoregion is significant for two primary reasons. First, an ecoregion represents a suite of factors (climate, vegetation, landform) influencing, or potentially influencing, the evolution of species within that ecoregion. Since Missouri River Arctic grayling have existed for thousands of years in an ecoregion quite different from the majority of the taxon, they have likely developed adaptations during these evolutionary timescales that distinguish them from the rest of the taxon, even if we have yet to conduct the proper studies to measure these adaptations. Second, the occurrence of Missouri River Arctic grayling in a unique ecoregion helps reduce the risk of species-level extinction, as the different regions may respond differently to environmental change.

75 Fed. Reg. 54,708, Sept. 8, 2010. The Services have considered ecoregions during the listing process for the many other species, including: Pacific fisher (*Martes pennant*), 75 Fed. Reg. 19,925, Apr. 16, 2010; Greater Sage-Grouse (*Centrocercus urophasianus*), 75 Fed. Reg. 13,910, Mar. 23, 2010; Roundtail Chub (*Gila robusta*), 74 Fed. Reg. 32,352, Jul. 7, 2009; Southern DPS of Eulachon (*Thaleichthys pacificus*), 74 Fed. Reg. 10,857, Mar. 13, 2009; and Yellow-billed Cuckoo (*Coccyzus americanus*) 66 Fed. Reg. 38,611, July 25, 2001. These examples show that the Services have considered, as a matter of common practice, a species’ presence in an ecoregion as an important factor in the listing evaluation process. Evaluating the threat of extirpation from an ecosystem unit or ecoregion would present an approach to defining “significant” under the SPR that would be easy to implement, and straightforward in analysis. And, as will be described below, this provides a straightforward approach to considering historic range in the context of SPR.



II. THE POLICY DETERMINATION THAT LOST HISTORIC RANGE CAN NEVER REPRESENT AN SPR IS INCONSISTENT WITH THE ESA.

Intimately connected to the Draft Policy’s problematic definition of “significant” is its problematic definition of “range” which states: “loss of historical range cannot be a significant portion of the range...we cannot base a determination to list a species on the status of the species in lost historical range.” The Services’ conclusion does not represent the best available scientific information regarding lost historic range, is inconsistent with the Services’ past practices, and is simply inconsistent with the language of the ESA. Recent scientific research demonstrates that methods exist for objectively considering historic range. These methods provide a meaningful interpretation of the term “range” without requiring that a species be restored to every last square mile where the species once lived (Vucetich et al. 2006, Carroll et al. 2006, Carroll et al. 2010).

SCB recommends that, in conjunction with a definition of significant based on the presence or absence of a species within an Ecosystem Unit, lost historic range within an ecosystem unit may constitute an SPR and may provide a basis for protecting a species under the ESA. This would occur in situations where the Services concluded based on “best available science” that “conservation” measures as defined by the ESA could mitigate the threat factors that led to the listing of a species in the SPR and leads to its recovery within that portion of its range.

Under SCB’s approach lost historic range could constitute an SPR and provide an independent basis for listing, but it would not require the species be restored everywhere it once existed. SCB’s recommended approach would also allow the Services to set an appropriate baseline for what is considered “historic range” based on scientific principles found in the IUCN Red List and NatureServe species assessment protocols. It is important first to understand why the Services’ approach to historic range is inconsistent with the ESA.

A. The Services’ Conclusion that Lost Historic Range Can Never Constitute an SPR is based on a Misinterpretation of the Endangered Species Act.

The Services appear to rest their entire argument that historic range can never be an SPR based on a tortured semantic interpretation of one of the five listing factors under the ESA, which states that a species may be listed based on “the present or threatened destruction, modification, or curtailment of its habitat or range.” 16 U.S.C. § 1533(a)(1)(A). The Draft Policy argues that the above statutory definition’s inclusion of the words “present or threatened,” must mean that the Services can only consider present or future destruction, modification, or curtailment of a species’ habitat or range. SCB notes in passing that there is an equally plausible interpretation of this phrase—the words “present or threatened” could only modify the term “destruction” and the terms “modification” and “curtailment” are not limited to present or future changes.

Irrespective of the semantic interpretation of the clause, frequently modification of habitat within historic range has resulted in extirpation of a species from a region, and that habitat modification may persist to the present time to an extent that prevents recolonization of



that region. This persistent modification of habitat would clearly qualify as a present threat based on the plain language of the Act and Congressional intent, but would not be considered as such under the Services definition of range. While the phrase may seem ambiguous, Congress stated that Section 4(a) was “drawn broadly to allow the Secretary to declare endangered or threatened any species for any legitimate reason.” H.R. Rep. 93-412, Jul. 27, 1973. There is simply no reason to conclude that Congress intended such a narrow reading of this term as the Services now propose. The Ninth Circuit concluded as much in *Defenders of Wildlife v. Norton*, which held that “a species can 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. Those areas need not coincide with national or state political boundaries, although they can.” On appeal of the remanded decision, the Ninth Circuit clarified that it had indeed held that FWS must analyze whether lost historical range is an SPR. *Tucson Herpetological Society v. Salazar*, 2009 U.S. App. Lexis 10910 (9th Cir. May 18, 2009); *see also EPIC v. NMFS* (N.D. Cal. Mar. 2, 2004) (NMFS failed to analyze whether lost spawning habitat of the green sturgeon constituted an SPR).

B. The Services’ Conclusion that Lost Historic Range Can Never Constitute an SPR does not Represent the Best Available Science and is Inconsistent With its Own Past Practices.

The Services’ parsing of the ESA ignores the fact that the “present destruction” of a species’ habitat or range, is in fact, a culmination of a continuous historical process of extirpation and decline. Conversely, recovery into the future is a continuous process that reverses historical extirpations. An exclusive focus on the status of the species at the present moment may greatly limit the scientific rigor of listing determinations and the efficacy of recovery planning. This “shifting-baseline” approach has been extensively critiqued in the scientific literature, and has been demonstrated to have significant negative consequences for biodiversity where it is utilized by resource management agencies (Pauly 1995, Papworth et al. 2008). This shifting-baseline approach will likely result in significant problems for threatened and endangered species. Waples et al. (2008) provided an extensive critique of excluding historic range as an independent basis for an SPR finding when the same approach was first proposed in the 2007 M-Opinion:

It is easy to show through reductio argumentation that this approach is logically flawed.... At time 1, an ESA ‘species’ consists of 10 populations, 9 of which are on the verge of extinction/extirpation while the tenth is relatively healthy []. Most frameworks would probably consider this species to be at risk in a significant portion of its range. After a (perhaps short) period of time, the 9 at-risk populations wink out, leaving a single remnant population []. Clearly, the status of this species has declined from time 1 to time 2, because extirpation of 90% of its historical populations occurred during that interval. Under the shifting-baseline framework... however, the species can now be considered to be not at risk, because the sole remaining population occupies most or all of the current range of the species []. This process of periodically recalibrating expectations based on current conditions has been identified as a major obstacle to sound conservation and management of biodiversity (Pauly 1995; Dayton et al. 1998). In addition, if



this approach were widely adopted it would create incentives that could work against fundamental goals of the ESA.

Waples et al.'s critique raises several important concerns about the Services' conclusion that lost historic range can never be an SPR. First, it is difficult to know at what point in time a species' range no longer qualifies as "current" range. Inadequate funding has resulted in a lengthy delay in listing of species which are 'warranted' for listing but precluded by other priorities (Harris et al. 2011). As a result, there are currently 240 species awaiting listing under the ESA. 76 Fed. Reg. 66,370, Oct. 26, 2011. Some of these "candidate species" have been awaiting listing for over 20 years. Improper political interference within the Services can also lengthen the amount of time a species is denied protection under the ESA (USDI 2008). For these species, at what point should the Services consider current range, when they first petitioned for listing or when they are finally protected under the ESA decades later? This shifting baseline approach would incentivize private actions that harm biodiversity because once habitat is destroyed and range is lost, it becomes "historic" range and is no longer relevant to the SPR analysis. Even in situations where delays are minimal, it is still unclear exactly where the line would be between "current" and "historic" range. Current range could potentially be set at the time of the initial petition, or upon the completion of the 90-day finding, 12-month finding, draft rulemaking, or final rulemaking stage. None of these possible alternatives would represent the best available science, because the scientific literatures makes clear that historic range is an integral component of the conservation and restoration of endangered species.

For example, research on geographic patterns of decline for threatened and endangered species concluded that "despite the frequency of range contractions, recovery objectives rarely address range contractions directly...the status of species that have declined in range may be most improved by restoring the species to areas within its historic range in which habitat is still present and that extend the environmental gradients occupied by the species" (Leidner and Neel 2011). In other words, opportunities for species recovery will likely be enhanced if a species has returned to its historic range. Because few species can be recovered without significantly increasing population size accompanied by expansion into suitable but unoccupied habitat, the ESA specifies that critical habitat for a threatened or endangered species may include "areas outside the geographical area occupied by the species at the time it is listed" 16 U.S.C. §1532(5)(A)(ii). The Draft Policy also conflicts with the best available science because it fails to recognize that conditions within species' current ranges may have so deteriorated as to effectively prevent full recovery there, thus requiring recovery efforts to also focus on conservation opportunities elsewhere within a species' historic range or, in light of ongoing or probable habitat shifts due to climate change, in areas beyond a species' historic distribution (McLachlan et al. 2007). Thus, classic meta-population dynamics are ignored by the Services by foreclosing on the possibility that high-quality habitat that is currently unoccupied could be utilized in the future as an important source population for an endangered species.

We present a case study to illustrate the conceptual and practical problems that arise from the new definition of "range." Wolves were extirpated from Colorado in the 1930s. Currently, there is suitable habitat in Colorado that is thought to be capable of supporting 400-1200 wolves (Carroll et al. 2006). However, under the Draft Policy, habitat in Colorado could not constitute a



SPR for the wolf because Colorado represents lost historic range. In comparison, the Modoc Plateau of California is thought to be capable of supporting >100 wolves (Carroll et al. 2006). Currently, there is one known wolf OR-7, which dispersed from a pack in Oregon, which currently is living in California (CDFG 2012).⁶ Because there is now a single wolf in northern California, some portion of that State would, under some definitions, need to be considered within the “current” range of the wolf. Similarly, the recolonization of wolves to the Western Cascades in Oregon and Washington, outside of the Northern Rocky Mountain DPS has altered what is considered to be the current range of wolves. In all four states, there is suitable unoccupied habitat, which could become an important source population for wolves in the future. In all four States, there may be significant ecosystem benefits from restoring and recovering the wolf, and the added genetic diversity that these areas might eventually represent could be potentially important to the wolf in the future. Yet, if these colonizing wolves were to be killed, the current range would revert to some previous arbitrary boundary, and the FWS would no longer be required to consider this as an SPR for the purposes of protecting the wolf. Given uncertainty about the future especially with respect to climate change, it is possible that these peripheral areas of the range may in the future play a crucial role in connecting populations across an expanded distribution in Colorado, California, and beyond. But, because the Draft Policy has arbitrarily rejected a consideration of historic range as an SPR *in all cases*, these conservation benefits may or may not be realized. In this respect, the draft policy does not promote rigorous consideration of population connectivity and meta-population dynamics.

This case study also highlights the scale-dependent nature of range, and thus the inherently arbitrary nature of limiting “range” to “current range.” First, the current range of a patchily-distributed or recolonizing population such as gray wolves in the Pacific states may be alternately delineated based on locations of all individuals including transient dispersing wolves, resident individuals only, or only breeding pairs or packs. Recently, FWS has proposed that “current range” for wolves be limited to areas that contain “at least two breeding pairs of gray wolves that each successfully raise at least two young” annually for 2 consecutive years (USDI 2012). By raising the threshold for including a geographic area within current range, the Services can arbitrarily exclude regions such the Pacific Northwest or Colorado from consideration as DPS or SPR even if they are currently being naturally recolonized by a species, simply because that recolonization is still in its early stages.

Second, once the type of occurrences that “count” towards current range are identified, range can be alternately delineated based on a minimum-convex polygon or more restrictive kernel-based definitions following the IUCN and NatureServe assessment processes. Therefore, depending on the method used, the current range of a species could be significantly larger or smaller. In regard to this problem, the IUCN states:

Classification based on the sizes of geographic ranges or the patterns of habitat occupancy is complicated by problems of spatial scale. The finer the scale at which the distributions or habitats of taxa are mapped, the smaller the area will be

⁶ As of March 6th, 2012, OR-&7 remains in California. The wolf first entered California on December 28th, traveled over 1,000 miles within the State, crossed back into Oregon on March 1st, and re-entered California on March 5th.



that they are found to occupy. Mapping at finer scales reveals more areas in which the taxon is unrecorded. It is impossible to provide any strict but general rules for mapping taxa or habitats; the most appropriate scale will depend on the taxa in question, and the origin and comprehensiveness of the distributional data.

It is for this reason that IUCN and NatureServe distinguish between range (“extent of occurrence”), which is defined as “the area contained within the shortest continuous imaginary boundary which can be drawn to encompass all the known, inferred or projected sites of present occurrence of a taxon, excluding cases of vagrancy,” and “area of occupancy,” which is defined as “the area within its ‘extent of occurrence’ which is occupied by a taxon, excluding cases of vagrancy.” A taxon will not usually occur throughout the area of its extent of occurrence, which may, for example, contain unsuitable habitats.” IUCN 2001.

The Draft Policy makes no attempt to explain what current range means, how it will be established compared to historic range, or how it will account for area of occupancy versus extent of occurrence. For these reasons, it does not represent the best available science (Gaston and Fuller 2009).

Finally, the Draft Policy’s definition of “range” will be especially problematic for marine species, given the highly dynamic distribution of many marine species and the generally more limited data on marine species distributions. The complex three dimensional nature of the marine environment, and the rapid changes that can occur within this fluid medium, can result in rapid distribution (and depth) shifts that it is hard for science to keep track of (Norse & Crowder, 2005). Secondly, we often lack knowledge regarding the historic baseline of distribution and abundance for marine species. Where this data is available, it suggests the shortcomings of a “shifting baseline” approach that focuses primarily on current range. A meta-analysis of over 250 species from 95 studies concluded that the average decline over the estimated historical baseline was 89% for marine species, with diadromous fish, pinnipeds and sea turtles showing some of the sharpest historical declines (Lotze and Worm 2009). For example, data suggest that today’s population of 300,000 green sea turtles (*Chelonia mydas*) and 30,000 hawksbill turtles (*Eretmochelys imbricate*) both represent only 0.3% of their historical abundance. Many populations, particularly those of large, slow-growing species, remain at low abundance relative to historical baselines, even where recovery is occurring. For example, many of the great whales are relatively numerous, but remain a tiny fraction of their historic population abundance, which in turn could have subsequent consequences for the ecosystems of which their much larger populations were once a part (Springer et al., 2003).

Many marine species have been exploited for hundreds, if not thousands, of years. For example, the inshore haddock stock of the Wadden Sea has declined from an annual catch of 1200 metric tons in the year 1562 to a point now where stocks are nonexistent, and the haddock fishery operates far offshore. Similarly, whaling of the North Atlantic right whales (*Eubalaena glacialis*) began around 1000 AD in the Bay of Biscay, with a pre-whaling abundance of at least estimated 10,000 individuals on both sides of the Atlantic. Today, only 450 individuals remain in the western Atlantic Ocean. Historical catch data were used in a population model to estimate unexploited abundance of southern right whales at 80,000 individuals. The population was



depleted to 0.1% of former abundance in the early 20th century, yet recovered to 7600 individuals (9.5%) following protection. All of these studies demonstrate that without a proper historical baseline, it is likely that conservation activities will dramatically underestimate the amount of habitat needed to ensure a species' recovery and long-term viability.

In not every case does it make sense for the Services to consider the historic range of a species from a thousand years ago, but research clearly shows that context does matter for each species when considering historic range. A better, science-based approach for considering historic range would be to utilize tools such as NatureServe's assessment tools for both long and short term historic range occupancy. Under NatureServe's conservation status assessment process, the criteria *Long-term Trend* is assessed, by analyzing the observed, estimated, inferred, or suspected degree of change in population size, range extent, area of occupancy, and number of occurrences over an approximate 200-year time frame. NatureServe also assesses *Short-term Trend*, which is defined as the degree of change over ten years or three generation (whichever is longer, up to a maximum of 100 years). The Services should allow for considerations of historic range based on both of these trends criteria in determining whether lost historic range represents an SPR. Such an approach is more consistent with the ESA, which contains several provisions that expressly focus on historic range including translocation of species beyond their current range and designating critical habitat outside of currently occupied areas. Therefore, SCB recommends considering historic range at the outset, and then using a working definition of 'range' that gives particular attention to portions of a species' historic range that still contain potentially suitable habitat as a basis for protecting a species in an SPR, rather than a definition that focuses arbitrarily on current distribution (Carroll et al. 2010).

C. Lost Historic Range Can Constitute a Significant Portion of a Species' Range and Represents a Valid Justification for Declaring a Species Threatened or Endangered.

SCB proposes a portion of a species' lost historic range represents an SPR when that recovery of a species in that portion would mean the species would be restored to an ecosystem unit it had been previously extirpated from. Under this approach, unoccupied historic range represents a significant portion of the range when the species could be restored to an ecosystem unit utilizing "conservation" measures as defined by the ESA. The ESA defines "conservation" as the "use of all methods and procedures which are necessary to bring any endangered species or threatened species to the point at which the measures provided pursuant to this Act are no longer necessary. Such methods and procedures include, but are not limited to, all activities associated with scientific resources management such as research, census, law enforcement, habitat acquisition and maintenance, propagation, live trapping, and transplantation...." 16 U.S.C. § 1533(3). If the Services could restore a species to lost historic range utilizing those conservation measures it regularly employs to protect endangered species, then it should be the listed as endangered. This definition provides more-precise biological elements of the definition of range, fulfills the restorative mandate of the ESA, and removes perverse incentives to destroy habitat provided by the interpretation in the solicitor's opinion.

When combined with SCB's proposal for assessing significance, a species would be considered endangered within a significant portion of its range if it has been extirpated from one



or more ecosystem units that it historically occupied, despite its conservation status elsewhere in its range. Under this approach, as a species is restored to an ecosystem unit using “conservation” measures provided for under the ESA, it could be downlisted to threatened within that ecosystem unit as its population recovered, and eventually removed from the ESA if the threats of future extirpation in that ecosystem unit have been alleviated to the point that protection under the ESA is no longer necessary. This approach does not require that a species be restored to its full pre-decline historic range or abundance, instead it only requires that in each ecosystem unit where a species once occurred, that, if feasible using standard “conservation” measures, its population be recovered, to a point that it no longer needs the protections of the ESA within that particular ecosystem unit. Furthermore, as we discuss below this approach would not determine by itself the pace or manner of recovery as the ESA has several mechanisms for flexibility and implementing programs have practical limits as well that all stakeholders acknowledge.

D. Reconciling the SPR Policy with the Existing DPS Policy

In 1978, Congress amended the definition of the term “species” to include “any subspecies of fish or wildlife or plants, and any distinct population segment of any species of vertebrate fish or wildlife which interbreeds when mature.” 16 U.S.C. § 1533(16). There is virtually no legislative history explaining the change in the definition of “species” from the original definition contained in the 1973 ESA, which defined a species to include “any subspecies of fish or wildlife or plants and any other group of fish or wildlife of the same species or smaller taxa in common spatial arrangement that interbreed when mature.” *See* Public Law 93-205, Dec. 28, 1973. But, it is clear that this change limited the protection of Distinct Population Segments (DPS) of species and subspecies to vertebrate species only. Congress instructed the Services to protect DPS units “sparingly and only when the biological evidence indicates that such action is warranted.” S. Rep.151, 96th Congress, 1st Session. In 1996, the Services adopted a policy that provided a definition for how to define potential DPS units and outlined how the Services would identify units for listing under the ESA. FWS-NMFS joint *Policy Regarding the Recognition of Distinct Vertebrate Population*, 61 Fed. Reg. 4,722 Feb. 7, 1996 (hereafter “DPS Policy”).

Under the current DPS policy, a population must be both “discrete” and “significant” in order to qualify as a DPS. A population is discrete if it is (1) “markedly separated from other populations of the same taxon as a consequence of physical, physiological, ecological, or behavioral factors” or (2) “delimited by international governmental boundaries within which differences in control...are significant in light of Section 4(a)(1)(D) of the Act.” A population may be “significant” based on: (1) Persistence an unusual or unique ecological setting for the taxon, (2) Evidence that the loss of the population segment would result in a significant gap in range (3) Evidence that the discrete population segment represents the only natural occurrence may be more abundant elsewhere as an introduced population outside its historic range, or (4) Evidence that the discrete population segment differs markedly from other populations of the species in its genetic characteristics. It is important to note that the significance inquiry for a DPS unit is not a closed set, and the Services acknowledge that there may be other “classes of information that might bear on the biological and ecological importance of a discrete population segment.”



Depending on how one counts “evolutionary significant units” of salmon and steelhead, the DPS Policy has been used in approximately 40-60 listing decisions to protect listable entities other than species or subspecies. There has been very little consistency in how the DPS authority has been used, and how DPS units have been defined. DPS units have also varied in size quite significantly, the smallest DPS species, the Florida Keys rice rat (*Oryzomys palustris natator*), has a range of approximately 2,000 km², while one of the largest DPS species, the Canada lynx (*Lynx canadensis*), has a range of over one million square kilometers. Integrating a science-based SPR policy with the existing DPS Policy presents a significant challenge. If a DPS “species” can be as large as the entire lower 48 States (given that the Canadian border could represent a valid criterion for meeting the discreteness threshold), then a significant portion of a DPS species’ range could be conceivably very large in geographic scope. Under the Services’ proposed analytical framework, which is discussed in greater detail below, when a species is found to be threatened or endangered in an SPR, then the Services will protect that species range-wide, unless they are able to identify a valid DPS that could protect that portion of the species’ range. If the Services can identify a DPS, then the protections of the ESA will only apply to that DPS unit. But, this raises a difficult problem: If a DPS species (defined by an international boundary) is threatened or endangered in an SPR, would the Services have the power to define a DPS within an existing DPS unit? The Services attempt to avoid this problem by setting the threshold for “significant” under SPR at so high a level that “it [] will seldom result in situations in which the population within a SPR for a taxonomic species or subspecies might also constitute a DPS.” Under the Services reasoning, a DPS unit is rarely so important that, without the DPS, the taxonomic species is at risk of extinction. Therefore, it would be virtually impossible for DPS to qualify as an SPR in the first place, and as a result, the possibility of an SPR being equivalent to a DPS disappears.

A better way forward to address this difficult would be for the Services to revise the DPS Policy. The Draft Policy acknowledges that the Services considered revising the DPS policy to make it more compatible with the SPR policy, but declined to do so because the 1996 DPS policy “has already been through public review and comment and has been considered by many courts.” This reasoning is not consistent with the best science mandate contained in Section 4 of the ESA. If a policy implementing the ESA can be reformed and revised to incorporate the best available science, and in the process become more effective at fulfilling the purpose of the ESA, then the Services have an obligation to do so, regardless of whether a previous iteration of the policy has gone through notice and comment 17 years prior. Likewise, since the DPS policy can be revised in a manner that is consistent with court opinions on the DPS Policy, this too provides an insufficient justification for declining to revise the DPS Policy. SCB believes that, with small changes to the DPS Policy, the Services will be able to develop an integrated approach for both a SPR properly in the context of the DPS Policy.

First, the Services should revise their discreteness criterion to allow for ecosystem units’ boundaries to serve as boundaries of DPS units. Currently, the DPS policy requires that two DPS units be “markedly separate” from one another. But, the policy does not describe what this means in scientific terms. Therefore, it is unclear whether two DPS units could geographically abut one another. For example, with the recent listing of the Atlantic sturgeon (*Acipenser*



oxyrinchus), NMFS divided the Atlantic sturgeon into five DPS units, based on terrestrial and marine ecoregion boundaries. 77 Fed. Reg. 5,914, Feb. 6, 2012. Three of these DPS units are adjacent to one another, while two DPS units are more geographically distinct. Since ecoregions are often defined by natural boundaries such as watersheds, two DPS units could be adjacent to one another but still be distinct ecologically because they are composed of different ecosystems. It is also unclear under the current policy whether the fact that members of a DPS could intermix with another portion of the species is enough to defeat the discreteness inquiry. For Atlantic sturgeon, populations in one natal stream normally do not mix with other members of the species in other DPS units. But, NMFS acknowledges that a small percentage of adult sturgeon in a given age-class do spawn in rivers outside of their natal stream, meaning that some population mixing among the DPS units do occur. There does not appear to be a scientific basis for requiring two DPS units to be disjunct from one another, if anything, the ability to have genetic intermixing among two DPS units may strengthen the overall viability of each over the long-term. Accordingly, this criterion should be revised to allow for ecologically distinct areas to constitute DPS boundaries even where they may abut one another.

Second, the Services should add a fifth criterion for “significant” to include geographic representation in an ecosystem unit. Combined with SCB’s recommendation for defining “significant,” this change would mean that when a vertebrate is threatened in an SPR, it should be protected as a DPS unit, whose boundaries coincide with the boundaries of an ecosystem unit. To explain how this would work, we build on our earlier case study of the gray wolf. Under SCB’s proposed approach, each ecosystem unit the gray wolf historically and currently occupies represents a significant portion of the species’ range, and should be protected as a separate DPS unit. For those ecosystem units where the wolf has been extirpated, it would be listed as a DPS unit that is endangered. In those ecosystem units where the wolf currently persists, depending on its conservation status in those DPS units, it would either be listed as threatened or remain unprotected. If, for the sake of argument, the FWS were to use its ecosystem unit classification scheme, this would mean that the gray wolf would need to be listed as an endangered species in approximately 25 ecosystem units in the west, the central Rockies, Great Plains, and the northeastern United States because it has been extirpated from those regions. In practice this would not represent a change from its current status, since when taken together the ecosystem unit-based DPS of the gray wolf would roughly parallel the FWS’s 1976 listing, which remains in force today through most of the country still today, and which initially protected the wolf as an endangered species throughout the coterminous United States where it historically had been located. But the revised listing would provide an ecological basis for managing and delisting the species into the future (Carroll et al. 2006).

As the gray wolf recovers in each ecosystem unit, the FWS could downlist the wolf or remove or reduce the protections available under the ESA from each DPS unit. Recovery criteria for delisting would still be based on the best available science following the five statutory listing factors under the ESA. *It is important to note that this approach would not require the gray wolf to fully reclaim its historic range, since there are vast areas of historic habitat that have been converted to incompatible land-uses.* Instead, FWS would eventually need to restore the wolf in each DPS to the point at which it is no longer at risk of extirpation from that DPS unit, in other words, that the gray wolf has reclaimed the representation of each ecological niche that it once



historically occupied. This approach would be consistent with the intent of Congress, which desired flexibility and State participation in the management of endangered species. Since ecosystem units do not follow State lines, it would be possible that States would have control over managing species in portions of their respective States where the populations have recovered, while in other parts of the State, the FWS would retain overall management control though many states would also be active partners through Section 6 agreements to share some recovery costs and authorities. This is precisely how gray wolves are currently managed in the States of Oregon and Washington, despite a DPS unit that is based on arbitrary, non-scientific boundaries.

SCB also notes that this approach does not merge the DPS inquiry and the SPR inquiry together. First, a DPS of a species could be listed that is significantly smaller than protecting a species based on threats within an SPR. A DPS could also still be listed that does not represent a significant portion of a species' range. All that this approach would do is to create an additional category that could allow for the designation of DPSs of wide-ranging species, a process which the Services already utilize on an ad-hoc basis. This approach is legally compatible to other aspects of the ESA in that this interpretation of range corresponds to objective and measurable recovery criteria. The objective, measurable nature of this meaning of range is exemplified by recent models that quantify habitat quality for endangered species in terms of the level of threat factors as they currently exist on the landscape or would exist given mitigation and restoration efforts (Carroll et al. 2006). This approach is also compatible with modeling techniques that can be used to identify opportunities for extending a species' range if necessary due to ongoing or likely alterations of habitat conditions caused by climate change (Carroll et al. 2010). Finally it is important to recognize that this approach does not mean that a significant portion of its range always is equivalent to a DPS. Under this approach, with a wide ranging vertebrate species such as the wolf, the significant portion of its range being protected would be large area of approximately 25+ ecosystem units. The DPS units would be sub-divisions of the SPR, not the other way around. SCB believes that dividing an SPR into ecosystem unit based DPS units would allow for more ecologically focused, science-based management to recover a species. Since an SPR could still apply for plants and invertebrates, as discussed below, SPR would also retain independent meaning with respect to these species.

E. Implementation of a Revised SPR Policy in Conjunction with a Revised DPS Policy

Allowing lost historic range to constitute an SPR does raise some potential, hypothetical concerns regarding how such a policy would be implemented with respect to species that have lost nearly all of their historic range long before the passage of the ESA, yet are apparently secure in their remaining range for the short-term. The quintessential species in this category is the American plains bison (*Bison bison*). Historically the plains bison ranged from the Allegheny Mountains in the east to northeastern California in the west, to central Manitoba, Saskatchewan, and Alberta in the north, the panhandle of Florida in the southeast, and the Chihuahuan desert in the southwest (Meagher 1986; Boyd 2003; Reynolds et al. 2003). The historic range of the bison was approximately 2.8 million square miles (72 million km²) and the population was estimated to be between 30 and 75 million individuals. 76 Fed. Reg. 10,302, Feb. 24, 2011. Today, there are approximately 20,500 individuals in 62 conservation herds, which represents a population decline of over 99 percent. These conservation herds currently



occupy less than one percent of the historic range of the bison. The largest herd, in Yellowstone National Park, contains approximately 4,000 individuals. Most herds are less than 100 individuals in size, putting them at risk of inbreeding. Yellowstone's herd is the considered to be one of the only populations of bison that has not suffered from genetic mixing with domestic cattle. Yellowstone National Park sits on top of one of the world's super-volcanoes. Under either the Red List or NatureServe Criteria, a species that has undergone a 99% reduction in range, a 99% reduction in population, and is vulnerable to stochastic events and genetic inbreeding would likely be classified as endangered.

Under the approach recommended by SCB, the plains bison would be listed as an endangered species because it has been extirpated from a significant portion of its historic range. Because it is a vertebrate species, the FWS would be able to designate multiple DPS units of the bison. Given the wide historic range, the FWS would likely have to designate many DPS units of bison. For example, if FWS ecosystem units were chosen as the most appropriate ecosystem unit-scale unit for defining SPR, approximately 35 DPS units of the bison, representing the 35 distinct ecosystem units the bison historically inhabited. The recovery goal for each ecosystem unit would be to establish a large-enough self-sustaining population in that region to support a finding that the protections of the ESA would no longer be required. As stated above, the recovery and restoration of a species to an ecosystem unit representing lost historical range would be accomplished using the "conservation" measures provided for under the ESA. This approach would not require that the bison be restored to its full pre-decline historic range or abundance. Instead it only requires that in each ecosystem unit where the bison once occurred, that if it is feasible to use "conservation" measures to recover a population, then the FWS would have an obligation to undertake such an action though the pace and means could be set on a long term, practical schedule.

SCB also recognizes that this may not be practicable at the present moment in all ecosystem units, and the restoration of bison in ecosystem unit in the eastern or southern United States would likely not represent a high priority for the FWS given current budgetary constraints. However, this reality does not justify withholding the protections of the ESA from the bison. The FWS has in place recovery prioritization guidelines, which allow the Services to allocate their limited resources towards the development and implementation of recovery plans for threatened and endangered species based on four criteria—degree of threat, recovery potential, taxonomic status, and economic conflict. Endangered and Threatened Species Listing and Recovery Priority Guidelines, 48 Fed. Reg. 43,098 (Sep. 21, 1983). Under these existing guidelines, recovering bison in ecosystem-unit DPS units would be a low priority. First, under the taxonomic status criteria, FWS prioritizes the recovery of full taxonomic species over the recovery of listed subspecies and DPS units. Thus, DPS units of bison would be a low priority. In addition, in those DPS units where there is little viable habitat and high human population densities, recovery potential would be low, allowing FWS to defer recovery efforts. Likewise, because economic conflict may also be present, FWS would almost certainly defer recovery efforts based on existing policy. But, in places where human development and population densities are not high, normal conservation measures available to the Service would allow the Service and its conservation partners to take steps towards the recovery of the bison.



It is also important to recognize that deferring the recovery of the bison in some ecosystem units representing its lost historic range is fundamentally different from denying the bison protections under the ESA in the first instance, which is a decision that should be based solely on the best available science as stated in the ESA. Denying that the bison is endangered based on feasibility and resource constraints of the present fails to contemplate the temporal scale of recovery of such a wide ranging species, and overestimates the Services' ability to predict the future. The decline of the plains bison, like many other species on the ESA's list, took over 200 years to accomplish. Recovery of the species will likely take equally long, if not longer. Therefore, while it may be infeasible to recover the bison in some ecosystem units *today*, future conservation actions by the Federal government, state governments, and private entities may fundamentally change the recovery potential within a given ecosystem unit in the future. In fact, listing the bison may encourage cooperative, voluntary actions under Section 6 and Section 7(a)(1) of the ESA. For example, the FWS is in the early stages of building the Flint Hills Legacy Conservation Area, a 1.1 million acre (6070 km²) reserve to protect native tallgrass prairie. This area may eventually be able to support a herd of bison such that the species again has a meaningful presence in the tallgrass prairie ecosystems. If for example, FWS were to use its ecosystem unit classification system for bison, a restored bison population in the Flint Hills Conservation Area could even be sufficiently large to warrant the downlisting and delisting of the Platte/Kansas River and Arkansas/Red Rivers DPS units (assuming the five statutory factors in Section 4(a) of the ESA are met). This example is used to illustrate that a bison DPS could potentially be recovered without necessarily requiring that the species be recovered to all of its lost historic range prior to delisting. This approach would require the FWS to take an active role in managing the bison herds in each DPS to ensure sufficient genetic exchange (since connectivity might be extremely limited), but this is already a component of the Department of Interior's bison management plan.

SCB believes that this approach would provide significant benefits for the bison species as a whole, as well as to the ecosystems in which bison were formerly distributed. First, allowing bison to radiate and expand their populations into lost historic range will over time, likely result in increased genetic diversity as the herds adapt to different ecological conditions. Additional genetic diversity plays an important role as a safeguard against future change. Given that there are only a few bison herds that number more than a few dozen individuals, maintaining genetic diversity is a serious concern. Second, restoring bison to different ecosystems may provide significant benefits to the overall quality of the grassland ecosystems that bison inhabited, such as encouraging the germination and restoration of the Federally-listed running buffalo clover, which co-evolved with the bison to respond favorably to disturbance of the soil by the bison herds. Finally, such an approach would allow the full aesthetic, educational, historical, recreational, and scientific value of the bison to be accessed and enjoyed more fully by the public. Understanding the role of bison as one of the primary grazers of the American plains, would greatly increase our understanding of these ecosystems.



III. THE SERVICES IMPROPERLY JUSTIFY SETTING THE THRESHOLD OF SIGNIFICANCE BASED ON THE CONSEQUENCES OF LISTING A SPECIES.

A. Identifying the Proper Unit to Protect and List Under the Endangered Species Act Based on Threats within an SPR.

Over the past ten years, there has been a significant controversy as to whether the Services have the authority to list or delist a species only within a significant portion of such species' range. In 2007, the FWS published a formal legal opinion which concluded that when a species is threatened or endangered in a significant portion of its range, then it should *only* be legally protected within that portion of the range (M-37013: The Meaning of "In Danger of Extinction Throughout All or a Significant Portion of its Range," Mar. 16, 2007"). The M-Opinion also allowed the Services to delist a protected species within a significant portion of the range if the threats to such species had been alleviated in that portion, while leaving such species protected in other portions of its range.

Several district courts rejected the reasoning underlying the M-Opinion and held that a species must be listed range-wide when it is endangered based on threats within a significant portion of its range. *See Defenders of Wildlife v. Salazar*, 729 F. Supp. 2d 1207 (D. Mont. 2010) and *WildEarth Guardians v. Salazar*, 2010 U.S. Dist. LEXIS 105253 (D. Ariz. Sept. 30, 2010). These cases focused primarily on whether the Services had the authority to delist a species in a significant portion of its range, holding that the Services could only list and delist a species range-wide. However, other court decisions appear to support the legal reasoning that was formalized in the M-Opinion that a species could be granted protection only in a portion of its range. *See Defenders of Wildlife v. Norton*, 258 F.3d 1136 (9th Cir. 2001); *Southwest CBD v. Norton*, 2002 U.S. Dist. Lexis 13661 (D.D.C. July 29, 2002); *Marbled Murrelet v. Babbitt*, 1992 U.S. Dist. Lexis 14645 (W.D. Wash. 1992). Notably, one District Court appeared to hold that the Services had the option to choose either approach—listing range-wide or listing only in the SPR—depending on the facts at hand. *See Tucson Herpetological Society v. Kempthorne*, Civ. No. 04-00075-PHX-NVW (D. Ariz., July 12, 2007) (“the lizard could, but need not, be listed throughout all of its range if the Secretary were to conclude...that the lizard is ‘endangered’ or ‘threatened’ throughout a ‘significant portion’ of its range” without resorting to the designation of a DPS unit “to accomplish a geographically tailored listing, since the authority is apparent on the face of the statute itself.”).

In 2011, the FWS withdrew the 2007 M-Opinion, and the Draft Policy has adopted the position taken by the Montana District Court in 2010 that when a species is endangered within an SPR, then the species will be listed as endangered range-wide. In these situations, the Services would not be permitted to list the species as threatened or to leave the species unprotected in the remainder of its range. SCB supported the Services' earlier decision to withdraw the M-Opinion because of its identically flawed approach to assessing historic range and significance. However, SCB is not convinced that the Draft Policy candidly addresses the complexity of the legal question at hand, regarding what the proper listable entity is when a species is threatened or endangered in an SPR. Assuming that the Draft Policy's approach of protecting species range-wide is the proper interpretation of the ESA, SCB acknowledges that such an approach is



consistent with the precautionary principle and the scientific principles of conservation biology, including the current understanding of effective population sizes and meta-population dynamics (Den Boer 1968, Gilpin 1987). SCB notes that protecting species range-wide based on threats that occur only within an SPR, however, will likely result in unintended consequences that may be contrary to Congressional intent under the ESA, and may result in the ESA being applied to protect populations where those protections are not needed. However, SCB is most alarmed by the fact that the Services are using the hypothetical consequences of this interpretation of the law to improperly to rationalize setting a very high threshold for defining “significant” in the SPR inquiry.

B. Consequences of Listing a Species Based on Threats Within an SPR

Listing a species range-wide after finding that it is threatened or endangered based on threats within a significant portion of its range *may* have consequences for the regulated community. As the Services explain, this interpretation of the ESA “may lead to application of the protections of the Act in areas in which a species is not currently endangered or threatened with extinction, and in some circumstances may lead to the expenditure of resources without concomitant conservation benefits.” In addition, depending on how the final policy is crafted, the definition of significant portion of its range may or may not “require the Services to impose restrictions and expend conservation resources disproportionately to conservation benefit.” However, SCB notes that it is simply *impossible* to predict in advance what the consequences will be for listing a given species on the regulated community or how the Services will allocate resources to address endangered species. There is sufficient data in the scientific literature that indicates that early interventions to protect declining species are more cost-effective in the long-term than delaying those interventions until a species is critically endangered (Taylor et al. 2005). Indeed, the entire philosophy of the FWS’s candidate conservation program is focused on allocating resources to improve the conservation status of species, thereby alleviating the need for more restrictions and resources allocated after formal listing under the ESA.

However, in this policy, the Services appear to assert that protecting a species range-wide whenever they might make a finding based on threats within an SPR will *always* lead to disproportionate restrictions on the regulated community and/or the misallocation of resources. And that, therefore, the Services are left with no choice but to interpret the SPR phrase “relatively strictly” and to set a threshold for “‘significant’ that is relatively high.” This policy conclusion clearly conflicts with the best science mandates contained in the ESA which were reinforced with regard to listing in 1982 by a Congress that was adamant that listing decisions be based “solely” on that best available scientific and commercial data as a repudiation of the Reagan Administration’s subjecting listing proposals to a “regulatory impact analysis.” The conference and House reports agreed as the House stated: “Applying economic criteria to...any phase of the listing process... is specifically rejected by the inclusion of the word ‘solely’ in this legislation.”⁷ By extension, policies that could potentially impact hundreds of listing and

⁷ H.R. Rep. No. 567, Pt. 1, 97th Cong., 2d Sess. 20 (1982) and H.R. Conf. Rep. No. 835, 97th Cong., 2d Sess. 20 (1982). At the same time, the Congress increased the flexibility provided for both managing species after they are listed and for listing them in the face of limited budgets for listing so that the fundamental principles and the



delisting decisions must also be based on the best available science. But instead, the Services appear to be defining significant and range based on potential economic, regulatory, or resource allocation concerns that are purely speculative in nature. Protecting a species range-wide will likely have conservation benefits to that species. Whether or not the benefits of such a listing would be disproportionate to the costs of such listing would involve a complex analysis on a case by case basis. Depending on what type of cost-benefit accounting the Services undertake, it would be unlikely that a simple conclusion could ever be reached as to the benefits of range-wide listings. Furthermore, as the Services acknowledge, they “have the discretion to implement the Act, where possible, to avoid or minimize expending resources on actions that either do not address threats that led to the species warranting listing or do not advance recovery of the species.” Therefore, it would appear that any concerns regarding the consequences of range-wide listings can be sufficiently addressed using existing policies on resource prioritization and recovery planning. For these reasons, SCB recommends that the Services removing the first component of the policy: *Consequences of a Species Being in Danger of Extinction or Likely to Become So in an SPR* to acknowledge the consequences of listing a species, as described broadly in terms of regulatory impact projections, should have no bearing or impact on how the Services arrive at a interpretation of the phrase “significant portion of its range” nor on the listing of the species for those considerations have been rejected by Congress and amply provided for throughout the rest of the Act.

Removing this section of the Draft Policy pertaining to consequences of listing does not mean that SCB is unaware of the consequences of listing a species, or the Services would ignore the consequences of listing as they pertain to each species. This approach simply acknowledges that listing is based *solely* on the best available science because the Act includes a wide array of tools for managing the conservation and recovery of species once they are listed. These allow for the application of the Act as we recommend here without any undue burden or inordinate expense. These include the use of experimental, non-essential populations that do not have critical habitat, incidental taking processes, emergency procedures, and full exemptions if necessary. They also include reasonable timetables for recovery that recognize that recovery is not an overnight process.

C. Reconciling the SPR Policy when Listing Plants and Invertebrates

In 1976, the FWS listed the U.S. population of the Bahama swallowtail butterfly as a threatened species based on threats within a significant portion of the species’ U.S. range. When the ESA was amended in 1978 to limit protection of distinct population segments to vertebrates, the FWS delisted the butterfly. No rationale was given. However, this decision clearly implied that FWS did not believe it had the ability to list an invertebrate species only in a portion of its range. SCB acknowledges that one of the biggest difficulties in integrating the SPR policy with

emergency and regular listing powers of the Act would remain undiluted by conjecture about economic consequences but so that the real consequences once listed would be manageable through incidental taking permits and statements, experimental populations, and other elements in addition to the exemptions process already included in the Act. The Merchant Marine Committee and its Senate counterpart rejected the “regulatory impact analysis” approach to rejecting listings or making them more difficult to achieve than before and amended the Act accordingly in 1982.



the rest of the Endangered Species Act arises when one attempts to determine how SPR should relate to plants and invertebrates. Under the Draft Policy, if a plant species or invertebrate species is threatened or endangered within an SPR, then it must be listed range-wide. The Services would be prohibited from identifying and listing a Distinct Population Segment of any plant or invertebrate species because the DPS provision of the ESA only applies to vertebrates. In other words, plants and invertebrates would have a greater scope of protection in all cases than vertebrate species as the invertebrates would be ineligible for protection as DPS units. SCB believes that the conservation of plant and invertebrate biodiversity is equally as important as the conservation of vertebrate diversity. However, it is clear from the text of the ESA that the Congress has provided different tools for conserving plants and invertebrate species.

SCB believes that the simplest solution would be for the Services to fully explain how they envision this policy will apply to invertebrates and plants. It may be necessary to establish separate scientific listing thresholds for these taxa and/or policy decisions such that when plants or invertebrates are listed based on threats within an SPR, then they will generally be listed as “threatened.” Under this approach, the Services would preserve their authority to utilize Section 4(d) of the ESA, which can limit the overall regulatory impact of a listing action.

CONCLUSION

We believe that, by taking into account the most current scientific research in the field of conservation biology in the final policy interpreting the term “significant portion of its range, the Services will be able to effectively conserve and restore threatened and endangered species and meet the best science mandates contained in the ESA. Thank you for your consideration of these comments.

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