July 5, 2010

Electronically to www.regulations.gov, and by mail to:

Division of Policy and Directives Management;

Attn: FWS–R3–ES–2011–0029

U.S. Fish and Wildlife Service;

4401 N. Fairfax Drive,

Arlington, VA 22203

Re: Comments by the Society for Conservation Biology – North America Section on 50 CFR Part 17 26086-26145 (RIN 1018–AX57) - Proposed Rule To Revise the List of Endangered and Threatened Wildlife for the Gray Wolf (*Canis lupus*) in the Eastern United States, Initiation of Status Reviews for the Gray Wolf and for the Eastern Wolf (*Canis lycaon*).

On behalf of the North America Section of the Society for Conservation Biology (SCB-NA), we offer the following comments on the "Proposed Rule To Revise the List of Endangered and Threatened Wildlife for the Gray Wolf (Canis lupus) in the Eastern United States, Initiation of Status Reviews for the Gray Wolf and for the Eastern Wolf (Canis lycaon)." We are submitting comments because the scientific perspective provided by our organization, and the research conducted by our organization's member scientists, are highly relevant to the proposed policy, and because there are several key deficiencies in the proposed rule that should be remedied in order for the Service to meet the Endangered Species Act (ESA) mandate requiring use of the best available science.

Based on our review of recent research relevant to wolf recovery policy, we recommend that the FWS complete six actions concerning the proposed rule:

1) Ensure that the National Wolf Strategy, proposed delisting of the western Great Lakes distinct population segment of the gray wolf (*Canis lupus*), proposed revision of the historic range of the gray wolf (*Canis lupus*), rangewide review of *Canis lycaon* in the United States and Canada, and status reviews for the gray wolf (*Canis lupus*) in the Pacific Northwest and Mexican wolves (*Canis lupus baileyi*) in the southwest United States and Mexico meets the standards of use of "best scientific and commercial data" as required under the ESA, in part by subjecting each to independent scientific peer review;

2) Consider both the intent of the ESA and relevant ecology and conservation science when defining the concepts of 'range' and 'significant portion of range';

3) Consider recent genetic research in evaluating the significance of potential listing units;

4) Resolve taxonomic issues more fully before removing protections from (delisting) wolf-like canids in the northeastern United States, and separate the taxonomic reclassification issues in the proposed rule from other proposed actions;

5) Consider the relevance of wolf metapopulation ecology and historic genetic population structure when applying DPS concept; and

6) Use current population viability analysis (PVA) methodologies to support recovery planning at both the national and regional level.

We provide details on the six requested actions below after briefly reviewing SCB's qualifications to comment on this issue.

Background on SCB's expertise on wolf recovery policy

The Society for Conservation Biology (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 more than 8,000 members worldwide. The Society also includes lawyers with expertise in the ESA.

SCB-NA has been in communication with the Fish and Wildlife Service (FWS) on several previous occasions concerning management of wolves under the Endangered Species Act. In December 2007, SCB-NA submitted scoping comments on the Environmental Impact Statement and Socio-Economic Assessment for the Proposed Amendment of the Rule Establishing a Nonessential Experimental Population of the Arizona and New Mexico Population of the Gray Wolf (72 Fed. Reg. 151: 44065). In March 2008, SCB-NA sponsored an interdisciplinary workshop on applying conservation science to wolf recovery goals under the Endangered Species Act, which resulted in a publication reviewing this issue and its relevance to broader issues regarding interpretation of the Endangered Species Act (Carroll et al. 2010). In March 2009, SCB-NA submitted a letter to the FWS offering assistance in evaluating how current scientific research might better inform the process of setting recovery goals for the gray wolf in the western United States. In November 2010, SCB-NA submitted comments recommending initiation of recovery planning and related actions for the Mexican wolf (*C. l. baileyi*). Several of the actions we proposed have since been initiated, and are related to the portion of the current proposed rule regarding a status review for Mexican wolf. SCB also prepared an extensive discussion of proposed changes to regulations concerning implementation of the Endangered Species Act in its Recommendations to the Obama Administration and Congress in late 2008, which is also relevant to aspects of the proposed National Wolf Strategy.

DETAILS ON REQUESTED ACTIONS

1) Ensure that the National Wolf Strategy, proposed delisting of the western Great Lakes distinct population segment of the gray wolf (*Canis lupus*), proposed revision of the historic range of the gray wolf (*Canis lupus*), rangewide review of *Canis lycaon* in the United States and Canada, and status reviews for the gray wolf (*Canis lupus*) in the Pacific Northwest and Mexican wolves (*Canis lupus baileyi*) in the southwest United States and Mexico meets the standards of use of "best scientific and commercial data" as required under the ESA, in part by subjecting each to independent scientific peer review.

We support the FWS's decision to evaluate wolf recovery at the broadest relevant spatial scale (the lower 48 states) by means of a 'National Wolf Strategy'. This Strategy has the potential to greatly increase the efficacy and comprehensiveness of any actions to further recovery of *Canis lupus*. The rule sets out three goals for the Strategy, which are all appropriate and consistent with the Act:

"The Service's national wolf strategy is intended to: (1) Lay out a cohesive and coherent approach to addressing wolf conservation needs, including protection and management, in

accordance with the Act's statutory framework; (2) ensure that actions taken for one wolf population do not cause unintended consequences for other populations; and (3) be explicit about the role of historical range in the conservation of extant wolf populations."

The use of regional management plans tiered to a national recovery strategy allows the FWS flexibility to account for regional differences in the context of endangered species recovery while ensuring a coherent rangewide approach. Such a comprehensive strategy helps ensure that the key principles of resiliency, redundancy, and representation inform recovery strategy at both national and regional scales (Shaffer and Stein 2000, Redford et al. 2011). Although the National Wolf Strategy has the potential to serve as such a comprehensive blueprint for recovery, several aspects of the Strategy's development appear problematic and may limit its ability to serve this purpose.

The rule states that the Strategy is based on three precepts. The third precept states "wolf conservation under the Act is concerned with reducing extinction risks to imperiled entities; the strategy thus focuses on conservation of the four extant gray wolf **entities identified through the structured decision-making process** and being considered for section 4 actions: (1) The western Great Lakes population, (2) the northern Rocky Mountains (NRM) population, (3) gray wolves in the Pacific Northwest, and (4) the Southwestern population of Mexican wolves." [*emphasis added*]

It is unclear from the proposed rule how determination of "extant gray wolf entities" was made and whether this process conformed to appropriate scientific standards. The stated goals of the structured decision-making (SDM) process were: "(1) Promote and sustain wolf recovery; (2) comply with the requirements of the Act; (3) minimize the regulatory burden on

States, Tribes, and the general public; (4) facilitate State and Tribal management of wolves; (5) minimize wolf-human conflicts; and (6) promote public acceptance of wolf listing and recovery actions."

These are all laudable goals, and appropriately form components of any successful recovery planning process. However, the Act states that biological and economic considerations will be addressed at distinct stages of the listing, critical habitat designation, and recovery planning processes. The best available science should be used to determine what the biological thresholds are for being no longer threatened, and only then should the process consider how best to meet these thresholds. Because the National Wolf Strategy is a *de facto* recovery plan for gray wolves at the species level (*Canis lupus* and proposed *Canis lycaon*), goals 3, 4, 5, and 6 should be addressed after biological recovery goals are evaluated. The history of this SDM process, in which a draft strategy was initially prepared by federal agencies and then subsequently abandoned and the SDM process reinitiated with state involvement, suggests that some states actively lobbied to be largely excluded from wolf recovery efforts.

Although the rule states "Management of wolves is shared among the Service, States, and Tribes", the Act confers primary responsibility for recovery of endangered species on the Services (FWS and NMFS). The Act then sets out ways of engaging others, including each federal agency, in consultation with the Secretary of Interior in this case, in order to develop each agency's: 1) section 7(a)(1) programs to contribute affirmatively to the recovery of listed species; 2) section 6 programs with the States; 3) section 5 activities for land acquisition and conservation planning for the National Forest System; and 4) sections 8 and 8A activities for international conservation and the Western Hemisphere Convention (e.g., as considered in the

Mexican wolf recovery program). The lack of involvement of and review by independent scientists in development of the National Wolf Strategy creates uncertainty as to whether the process met the requirements of the Act to defer consideration of economic constraints until secondary stages of recovery planning.

<u>2) Consider both the intent of the ESA and relevant ecology and conservation science when defining the concepts of 'range' and 'significant portion of range'</u>

The first precept guiding the National Wolf Strategy is stated to be *"in order to qualify for any type of listing or delisting action, wolf entities must conform to the Act's definition of ''species,'' whether as taxonomic species or subspecies or as distinct population segments."*

Recovery policy for several species including wolves has been mired in controversy and litigation surrounding the interrelated issues of a) interpretation of the Act's language concerning "significant portion of range"(SPOR), and b) application of the Vertebrate Population Policy (Fay and Nammach 1996) concerning distinct population segments (DPS). Rigorous consideration of these issues is central to development of a National Wolf Strategy than is both effective and legally sufficient.

We support the FWS's decision to withdraw past guidance concerning SPOR (USDI 2007) and to develop a new policy regarding the interpretation and implementation of SPOR. We interpret the intent of the Act and relevant conservation science and case law as suggesting the importance of considering currently or potentially suitable historic range when determining if a species is endangered in a significant portion of range (Vucetich et al. 2006, Carroll et al. 2010). In contrast, previous FWS policy on SPOR (USDI 2007) interpreted 'range' in the context of the

Act as referring to ‘current range’. This interpretation is problematic as summarized by Carroll et al. (2010):

“Several problems arise from defining recovery primarily by reference to a species' diminished range at the time they were listed as threatened or endangered. This interpretation ignores the biological justifications for consideration of spatial population dynamics in population viability analysis (Gilpin 1987). 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 (3.5)(A)(ii)). The Solicitor’s interpretation results in inconsistent *ad hoc* determinations of "significance" (Enzler & Bruskotter 2009, Greenwald 2009). It provides a perverse incentive for destruction of habitat and individuals to ensure that little current range exists. It is inconsistent with successful recovery programs focused on species that at one time had no current range outside of captivity (e.g. Mexican wolf (*Canis lupus baileyi*), red wolf (*Canis rufus*), California condor (*Gymnogyps californianus*), black-footed ferret (*Mustela nigripes*)). 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). Lastly, it stands at odds with Section 3(3) of the ESA, which unambiguously recognizes "transplantation" of individuals as a valid conservation tool.“

Following Carroll et al. (2010), we suggest that range, in the context defining species recovery, means historic range that would provide suitable habitat if application of what the ESA defines as "conservation measures" removed or mitigated the threat factors that led to the listing of a species as threatened or endangered. This definition provides more precise biological and legal elements of the definition of range, fulfills the restorative mandate of the ESA, and removes perverse incentives to destroy habitat. This interpretation of range also has a legally sensible relationship to several other aspects of the ESA in that (i) removal and mitigation of threat factors is an important ESA process, (ii) threat factors are central aspects of listing and delisting decisions, and (iii) this interpretation of range corresponds to the objective and measurable recovery criteria which are required in recovery plans (per Section 4(f)(1)(b)(ii)).

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). Furthermore, the ESA is the implementing statute for several treaties, two of which (the Western Hemisphere Convention and CITES) use their powers to conserve species using such ecologically-informed concepts of range. The Western Hemisphere Convention requires that we protect species listed on its appendices beyond specific protected areas, such as parks, and CITES (Article IV) enforces this concept of protecting species as functioning parts of large ecosystems, by requiring that commercial exports of a species or its parts be halted if that species is found not to be fulfilling its role in its ecosystem throughout its range.

The definition of range set forth above implies that both the National Wolf Strategy and subsequent DPS status reviews should make use of data on distribution of suitable habitat (e.g., Carroll et al. 2006, Oakleaf et al. 2006). This approach is implied in the rule when it is stated: “Although some of these areas are within the species’ historical range, these areas lack sufficient suitable habitat for wolf pack persistence.” However, examination of relevant data (e.g., Carroll et al. 2006) suggest that a significant portion of range with extensive suitable habitat has been excluded from the entities proposed in the rule (the western Great Lakes population, the northern Rocky Mountains population, gray wolves in the Pacific Northwest, and the Southwestern population of Mexican wolves). This region falls within the states of Colorado and Utah. Based on evaluation of currently suitable habitat, the two states could currently support over 1500 wolves, making their importance to recovery of the wolf metapopulation second only to that of the Northern Rocky Mountains states (Carroll et al. 2006). Thus this “Southern Rockies” region may warrant DPS status due to presence of extensive habitat, a unique ecological setting, and importance for metapopulation connectivity. Such evaluations of potential DPS designations should also consider significance in terms of the ecological setting and ecosystem role of species (Soulé et al. 2003, 2005). The superabundance and resultant ecological impacts of elk (*Cervus elaphus*) in portions of Colorado and other western states suggest that wolf restoration could play a role in mitigating these impacts (Singer and Zeigenfuss 2002).

A generalized oval area encompassing portions of Arizona, New Mexico, Colorado, and Utah is used by the FWS to indicate the extent of the status review of the Mexican wolf (*C. l. baileyi*). Recent genetic research does suggest that there historically existed a wide zone of genetic intergradation between *C. l. baileyi* and other wolf subspecies that included portions of southern Utah and Colorado (Leonard et al. 2005). However, there is no evidence from genetic studies that northern Colorado and Utah were historically inhabited by wolves belonging to this genetic "southern clade".

Because the "Southern Rockies" region of Colorado and Utah may well constitute a SPOR for *Canis lupus*, a comprehensive National Wolf Strategy should consider the entirety of this area rather than only that portion falling within historic range of the Mexican wolf. Even if reintroduction efforts to restore viable populations do not occur in northern Colorado or northern Utah, appropriate criteria for what constitutes 'recovery' are still necessary to guide wolf management in those areas of those states before and after delisting. It would be inappropriate to assume that numeric and geographic recovery goals devised as part of the the recovery planning process for *C. l. baileyi* can necessarily serve as recovery goals for the Southern Rockies SPOR as a whole.

3) Consider recent genetic research in evaluating significance of potential listing units

The second precept guiding the National Wolf Strategy is that the Strategy *"promotes the continued representation in this country of all substantially unique genetic lineages found historically in the lower 48 States."* We encourage the FWS to consider recent research that is relevant to this aspect of the Strategy. For example, Vonholdt et al. (2011) recently performed the most comprehensive assessment to date on genetic diversity in the wolf. The results suggested that Mexican wolves are the most genetically distinct group of New World wolves, corroborating the hypothesis that this subspecies is a remnant of an ancient invasion from

Eurasia and of conservation importance. Other genetic partitions that are relevant to the Strategy were defined as well. For example, the genetic distinctiveness of populations on the British Columbian coast (Muñoz-Fuentes et al. 2009, 2010), and the fact that dispersers from this area have been among those wolves colonizing Washington State, argues for the potential genetic distinctness of the Pacific Northwest DPS.

<u>4) Resolve taxonomic issues more fully before removing protections from (delisting) wolf-like canids inhabiting the northeastern United States, and separate the taxonomic reclassification issues in the proposed rule from other proposed actions</u>

The proposed rule recognizes "recent taxonomic information indicating that the gray wolf subspecies *Canis lupus lycaon* should be elevated to the full species *C. lycaon*." The proposed rule bases this decision on "results of recent molecular genetic analyses (e.g., Wilson et al. 2000, Wilson et al. 2003, Wheeldon and White 2009, Wilson et al. 2009, Fain et al. 2010, Wheeldon et al. 2010) and morphometric studies (e.g., Nowak 1995, 2000, 2002, 2003)." Based on these studies, the proposed rule concludes that "New England and portions of the upper Midwest (eastern and western Great Lakes regions) historically were occupied by *C. lycaon* and ... the gray wolf (*C. lupus*) did not occur in the eastern United States." However, a more recent and arguably more comprehensive assessment of the wolf genome concludes that "the Great Lakes wolves are genetically distinct from Western gray wolves (FST = 0.05), although whether such distinction reflects subspecies, ecotype, or distinct population status is controversial.... our results suggest admixture between a variety of gray wolf and coyotes may have contributed to the distinct phenotype and intermediate size of the Great Lakes wolf... We find a coyote–wolf admixture zone that stretched from Southern Texas to the Great Lakes and Northeastern US. …current preservation efforts are focused on populations whose admixed genomes may be due in part to recent habitat changes and predator control efforts...However, these concerns must be weighed against the beneficial top-down ecosystem effects that admixed populations have in environments, which now may be unsuitable for large wolves. Such ecologic, rather than strictly taxonomic considerations are also integral to deciding which species and subspecies should be preserved" (Vonholdt et al. 2011).

The proposed rule's use of *Canis lycaon* to designate wolves in the northeastern United States is thus inconsistent with currently recognized scientific nomenclature. Although *Canis lycaon* has been proposed as a valid taxon by some scientists, it is not formally recognized by taxonomic authorities. The most recent and complete genetic analyses lend stronger support to the theory that most wolf-like canids occurring in eastern North America are admixtures, rather than to the separate species theory. It is currently unclear how the genetic differences among the various wolf-like canids may manifest behaviorally and ecologically. As knowledge of the evolutionary history and genetics of wolf-like canids increases, researchers and managers will be able to more clearly distinguish admixed populations and clarify genetic relationships -- knowledge that, in turn, can be used to target conservation efforts to the appropriate genetic entity and ecological type.

Given this continued scientific controversy, the FWS should conduct a rigorous review of the taxonomic status of wolf-like canids inhabiting the northeastern United States, and subject this document to independent scientific peer review. The FWS should retain protection for wolf-like canids inhabiting the northeastern United States at least until completion of the taxonomic review and subsequent recovery planning for any listed entities consequent on the taxonomic review. It is premature to remove protections from wolf-like canids in the northeastern United States before these fundamental taxonomic uncertainties are resolved.

<u>5) Consider the relevance of wolf metapopulation ecology and historic genetic population structure when applying DPS concept</u>

The Vertebrate Population Policy underlying the DPS concept (Fay and Nammach 1996) is biologically problematic for wide-ranging terrestrial carnivores such as wolves and grizzly bears (*Ursus arctos*)(Rosen 1997). For example, importance in the context of range-wide recovery of *Canis lupus* may entail, among other factors, that loss of the species from a specific "significant portion of range" (SPOR) would significantly affect metapopulation connectivity at the species level. However, the very fact that such a geographic area is highly important to connectivity would imply that the subpopulation was not entirely 'distinct' from adjacent or nearby subpopulations. Thus, for species such as the wolf, importance under one criterion for designating a DPS would imply failure to meet a second criterion. The FWS should be cognizant of the importance of metapopulation connectivity (as opposed to distinctness in the sense of genetic isolation) when evaluating areas as potential DPS for wolves.

In order to maintain its ability to adapt to new environments (such as caused by climate change or novel diseases), a metapopulation should be of sufficient size to maintain a balance between loss of alleles via genetic drift and new alleles produced by mutation. The '500' component of the 50/500 rule specifies that retention of allelic diversity through a long-term balance between mutation and genetic drift may require that such subpopulations be part of a larger metapopulation with an Ne > 500 (Franklin 1980, Franklin and Frankham 1998).

Although recent reviews have contested the generality across taxa of MVPs in the range of thousands of individuals (Flather et al. 2011, *contra* Traill et al. 2007, 2010), this does not imply that certain taxa will not require such MVPs. Several aspects of the social structure and reproductive system of the wolf contribute to the species having a relatively low ratio of effective to census population size (Ne/N) that implies that relatively large metapopulations are necessary to maintain heterozygosity and genetic health. Ne/N ratios in gray wolves generally range from 0.2 – 0.4, while the ratio may be as low as 0.1 in taxa such as the Mexican wolf that have experienced population bottlenecks (Vonholdt et al. 2008, Wayne and Hedrick 2010)

Recovery of wolf populations of thousands of individuals that obtain effective population sizes that retain potential for future evolution will be challenging to achieve at the scale of any one DPS. However, habitat analyses suggest that these population numbers are feasible at the scale of the larger metapopulation inhabiting the western U.S. (Carroll et al. 2006). Wayne and Hedrick (2010) proposed that a genetically informed wolf management plan should be designed “to reestablish genetically interconnected wolf populations that can persist into the future”. Natural population structure in wolves is typically a continuous population with some degree of isolation-by-distance (i.e. increasing genetic difference with increasing geographical distance) and additional genetic heterogeneity reflecting specific ecological factors (Carmichael et al. 2007). Unexploited wolf populations typically show a considerable degree of genetic and demographic connectivity. Considering the natural genetic population structure of gray wolves and their distributional range in the recent past, it follows that recovery should be evaluated and secured at this broad metapopulation level, while retaining a consideration of the unique genetic characteristics of the lineages such as the Mexican wolf. In practical terms, this means that long-term sustainability of any subpopulation or DPS is in part dependent on metapopulation connectivity across a larger region encompassing several DPS. Recovery goals should consider 1) securing sufficiently high population sizes within each individual DPS and 2) securing sufficient connectivity among DPS through natural migration. Each DPS's contribution to the extended metapopulation may depend on a number of factors, including the area of suitable habitat found in the different regions.

Recovery of metapopulations that are large enough to ensure long-term genetic potential may also help achieve goals for recovery of ecologically-effective populations. Redford et al. (2011) emphasized that "an ecologically functional population generally will be larger than a demographically functional population (Soulé et al. 2005). In fact, Svancara and colleagues (2005) estimated that such populations may be orders of magnitude larger. This may be particularly relevant when populations need to be recovered from substantially reduced levels. Ecological functionality may be an important attribute to allow species to respond to changes in the composition of communities in the face of climate and other environmental changes."

The most commonly proposed rule of thumb for connectivity is the one-(genetically effective) migrant-per-generation rule (OMPG), which states that one migrant per generation into a subpopulation is sufficient to minimize the loss of polymorphism and heterozygosity within subpopulations (Frankel & Soulé 1981, Allendorf 1983). Subsequent reviews have concluded that "one migrant per generation is a desirable minimum, but it may be inadequate for many natural populations"(Mills & Allendorf 1996). For context, Vonholdt et al. (2010)

documented 1-2 genetically effective migrants per generation in the NRM wolf metapopulation during a period when this region held >1000 wolves. This level of connectivity may be more challenging to achieve in the other regions where areas of suitable habitat are smaller and more fragmented than in the northern Rocky Mountains (e.g., the Pacific Northwest, Carroll et al. 2006). But connectivity may be especially critical for population persistence in such regions that may be expected to support smaller subpopulations than the NRM (Carroll et al. 2006). This suggests that connectivity-related criteria and associated recovery actions should form a key element of both the National Wolf Strategy and DPS-level recovery planning. As a recent review states, "Genetic rescue is a reality in large carnivores and genetically effective migration is a critical variable in population management" (Wayne and Hedrick 2010).

6) Use current PVA methodologies to support recovery planning at both the national and regional level

Quantitative methods that fall under the heading of population viability analysis (PVA; Boyce 1992, Beissinger and McCoullough 2002) are routinely used to support recovery planning for endangered and threatened species (FWS 2011). However, those approaches have not been widely used in wolf recovery planning. Both federal and state wolf recovery plans have been criticized by scientific peer reviewers for failing to incorporate PVA (Fuller et al. 2010). For example, the recent Wolf Conservation and Management Plan for Washington State (Wiles et al. 2010), while exemplary in several aspects, was criticized by scientific peer reviewers for lacking a PVA: "PVA is an analytical tool that can be used proactively to evaluate how various management options affect the likely persistence of a species and understand what aspects of a population are critical to its growth. I agree with the plan authors that PVA cannot be used to make precise estimates of wolf sustainability in Washington at this time, but PVA definitely can and should be used to evaluate the relative likelihood that recovery targets will produce self-sustaining wolf populations. PVA could also be used appropriately at this time to understand the sensitivity of wolf population persistence to lethal management of various age cohorts, pack distribution, effective population size, birth and death rates, and prey populations. PVA at this time can provide relative, rather than absolute, answers. It would be an appropriate mechanism to evaluate the likelihood that wolves could continue to persist in Washington if their numbers reached the various thresholds proposed as a consensus or as a minority view. Without this analysis I cannot fully evaluate the biological appropriateness of the plan's downlisting and delisting criteria" (Fuller et al. 2010). Based on these concerns, SCB suggests that a rigorous National Wolf Strategy should either include a PVA or specify a role for such analyses in DPS-level recovery plans.

Conclusion

In summary, although comprehensive treatment of wolf recovery issues across the contiguous United States is a laudable goal, the proposed rule lacks logical coherence and scientific rigor, particularly in its treatment of outstanding genetic and taxonomic issues. Convenient definition of all possible species and admixtures as "gray wolves" is insufficient. An ecological argument can be made for considering all wolf-like canids as part of a National Strategy, but the reasons for doing so should be explicit. Additionally, decisions concerning recovery and delisting of individual 'species' (listed entities) should be made in the context of specific recovery plans or delisting proposals, rather than a general status review and taxonomic revision, so that the logical decision process required by the ESA, and expert participation therein, can take effect as intended in the Act.

Because of the contentious history of wolf recovery policy and the lack of transparency in the SDM process that led to development of the National Wolf Strategy, it is important that the Strategy be subject to rigorous peer review by independent scientists. This is especially important because further recovery efforts at the DPS or subspecies level will be tiered to the national Strategy, and thus inherit any uncertainty concerning the scientific basis of the Strategy itself. As Wayne and Hedrick (2010) state, "wolves are resilient and have the potential for population growth, dispersal and adaptability. The challenge will be to harness these characteristics in a scientifically justified plan that we have the will and political acumen to implement".

Several scientific societies have demonstrated expertise on wolf recovery issues in the context of the Endangered Species Act. These include SCB, the American Society of Mammalogists, The Wildlife Society and The Ecological Society of America. In order to ensure a Strategy that can withstand litigation and effectively recover the species, and given the broad implications of the proposed actions for delisting, SCB requests that the Secretary affirmatively invite professional society review, as suggested in Section 4(b)(5)(C) of the ESA for listing and delisting decisions, of the Strategy as well as subsequent DPS and/or subspecies recovery plans, to ensure that these documents properly consider and resolve the issues we have identified above and any others that arise from comments submitted on the proposed rule.

Thank you for your consideration of these comments.

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