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Distinct population segments and grizzly bear delisting in Yellowstone: a response to Rosen

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Abstract: Tatjana Rosen (previous article) recommends reforms to the policy outlining how distinct population segments (DPSs) are defined and then objects because the proposed DPS for delisting grizzly bears (*Ursus arctos*) in the Greater Yellowstone Ecosystem (GYE) does not mesh with her recommendations. The purpose of the Endangered Species Act (ESA; 16 US Code 1531–1544) is to prevent the extinction of species, subspecies, and distinct population segments (DPSs) of imperiled plants and animals, not to keep species perpetually listed. Policies designed to implement the ESA should be judged based on their contribution to the recovery of taxa and DPSs. In response to management efforts by state and federal agencies assisted by conservation groups, grizzly bears in the GYE have expanded in range and numbers and have exceeded recovery criteria established in the Recovery Plan. Although the current DPS policy may not be the perfect tool for listing or delisting in all circumstances, the DPS proposed for delisting Yellowstone's grizzlies meshes well with the intent of the ESA. Rosen's suggested revisions would lead to perpetual listing in areas where recovery has occurred and would be inconsistent with the purpose of the ESA to delist taxa and DPSs following recovery. In the GYE, and elsewhere south of Canada, grizzly bears will probably always remain a conservation-reliant species; this does not mean that they require or will benefit from continued listing when conservation efforts have succeeded in reaching recovery targets and regulatory mechanisms are in place to nurture the recovery.

Key words: conservation, distinct population segment, endangered species, Endangered Species Act, grizzly bear, *Ursus arctos*

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In 1973 the US Endangered Species Act (ESA; 16 US Code 1531–1544) was enacted in recognition of the importance of maintaining biodiversity by preventing the extinction of plant and animal species. The ESA has been called “the most far-reaching wildlife statute ever adopted by any nation (Reffalt 1991:78) and “one of the most exciting measures ever to be passed by the U.S. Congress, perhaps to be passed by any nation” (Rolston 1991:43). It has also been controversial, in part, because it mandates that federal land management agencies like the US Forest Service (USFS), the US Bureau of Land Management and the US Fish and Wildlife Service (USFWS) prioritize the conservation of listed species (ESA § 7(a)(1–3)); this can create conflicts between user groups for access to public lands.

The ESA created a mechanism by which imperiled species, subspecies, and distinct population segments

(DPSs) could be added to a list (‘endangered’ or ‘threatened’) based on 5 criteria. An imperiled species, subspecies, or DPS need qualify under only one criterion to be listed. The grizzly bear (*Ursus arctos*) was listed as threatened south of Canada in 1975 (Servheen 1999). Grizzlies were not listed in Alaska where healthy populations occur (Miller and Schoen 1999).

The 5 criteria the ESA mandates be considered when listing or delisting species or DPSs are (ESA § 4(a)(1)) “(A) the present or threatened destruction, modification, or curtailment of its habitat or range; (B) overutilization for commercial, recreational, scientific, or educational purposes; (C) disease or predation; (D) the inadequacy of existing regulatory mechanisms; and (E) other natural or manmade factors affecting its continued existence”.

The ESA-mandated priority for preserving species is fertile ground for litigation. Some conservation groups litigate to get species listed under the ESA

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and to challenge activities on public and private lands that they contend will harm listed species. Similarly, development interests often support delisting and oppose efforts to list new species because, under the ESA, listed species could be used as levers against economic interests. As representatives for these interests, attorneys work to identify and challenge non-compliance with the ESA. They also identify and challenge ambiguities in the ESA and in policies developed by agencies implementing these laws. The commentary by Rosen (2007) falls into the second of these categories. Rosen (2007) argued that the DPS policy (USFWS 1996) was poorly designed and inappropriate for making downlisting or delisting decisions, as exemplified by the decision to delist the grizzly bear in the Greater Yellowstone Ecosystem (GYE) (USFWS 2005).

The core of Rosen's (2007) position is that it is inappropriate to classify the GYE population of bears as a DPS and delist it in advance of equivalent levels of recovery in other designated recovery areas. In contrast, I contend that failure to delist well defined populations where recovery has occurred will discourage progress in other recovery areas and is contrary to the intent of the ESA. Rosen (2007) addresses the DPS issue with a legalistic argument about the appropriate nature of DPSs as defined by the ESA and the USFWS DPS policy and supplements her analysis with views about what the DPS policy should look like. I examine Rosen's contentions from biological and public policy perspectives rather than legal ones.

Distinct population segments

The ESA was amended in 1978 to clarify that listing could occur for "...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" (ESA § 3 (16)). "Distinct population segment" replaced the term "taxa in common spatial arrangement." Congress delegated defining DPSs to agencies because "[t]he task of defining and listing endangered and threatened species requires an expertise and attention to detail that exceeds the normal province of Congress" (*Babbitt v. Sweet Home Chapter of Communities for a Great Or.*, 511 US 687, 708 [1995] from Hausrath [2005:456]). The Federal agencies undertook this task with a 1996 policy describing how DPSs should be delineated. Rosen (2007) correctly identified the 3

policy elements that require consideration in deciding what constituted a DPS for listing or delisting (USFWS 1996:4726) as: "1) Discreteness of the population segment in relation to the remainder of the species to which it belongs; 2) The significance of the population segment to the species to which it belongs; and 3) The population segment's conservation status in relation to the Act's standards for listing (i.e. is the population segment, when treated as if it were a species, endangered or threatened?)"

In short, the policy defined a DPS as a portion of the range of a species that is deemed useful to identify to avoid the extinction of portions of a species' range when these portions are found to be both significant and distinct. The DPS policy (USFWS 1996) asserts that both significant and distinct conditions must apply to qualify as a DPS.

Rosen's (2007) concerns about the DPS policy are that:

- (1) The USFWS DPS policy primarily focused on how to classify DPSs for listing and therefore provides inadequate or inappropriate guidance for making delisting decisions.
- (2) The intent of Congress in the 1978 amendment to the ESA that allowed creation of DPSs when species were listed was to provide a DPS with greater protection than existed for the larger taxon containing it.
- (3) It is inappropriate to use a DPS classification in delisting circumstances when it would yield a lesser degree of protection for the DPS than exists for the taxon at large.

I agree with Rosen (2007) that the wording of the ESA suggests the drafters had listing rather than delisting foremost in their thoughts (it mentions the inadequacy of regulatory mechanisms as a reason for listing, not the adequacy of such regulatory mechanisms as a criterion for delisting). Rosen (2007) argues that a different standard for significance should be applied for listing and delisting or downlisting. However, the ESA is clear that the same 5 criteria were to be the basis for both listing and delisting decisions. It is implicit in the ESA that listed forms will be delisted when the problems based on these criteria have been corrected to the point where listing of the species (or DPS) would not be justified.

Rosen (2007:113) concludes that "...to classify and downlist a DPS of an endangered or threatened species should require that the population not be significant to the threatened or endangered species."

With respect to the proposal to delist grizzlies in Yellowstone, Rosen (2007) further concludes that (1) GYE grizzly bears are significant in that this population is important to the conservation of the species as a whole across its current range; and (2) because delisting grizzly bears in a GYE DPS would result in these bears having what she considers a lower level of protection than where they remain listed, it is inappropriate to classify such a DPS and delist it in advance of recovery of bears elsewhere. Rosen (2007) makes a case for what she thinks the DPS policy should be, then criticizes the grizzly delisting proposal because it does not mesh with her preferences.

The FWS DPS policy is clear about the significance requirement: “The requirement that a DPS be significant is intended to carry out the expressed congressional intent that this authority [to identify DPSs] be used sparingly, as well as to concentrate conservation efforts undertaken under the Act on avoiding important losses of genetic diversity” (USFWS 1996: 4746). The proposed GYE delisting rule addresses possible loss of genetic diversity by providing for translocation of bears to the isolated GYE population if genetic diversity declines, and for continued efforts to link to other populations (USFWS 2005). Introduction of 1 effective migrant per decade into the GYE population should suffice to maintain genetic diversity (Mills and Allendorf 1996, Wang 2004). I believe that routinely translocating more than this minimum would be feasible and prudent while efforts to establish natural corridors are ongoing.

I see no logic in Rosen’s suggestion that a population need be non-significant to qualify as a DPS for delisting purposes. What would be the purpose classifying and delisting a population that is non-significant to the species? Is there such thing as a non-significant population of a listed species? Rosen’s suggestion amounts to rejecting the possibility that a DPS could ever be used for downlisting or delisting, regardless of the conservation benefits that may derive from such actions. Rosen also seems to assume that delisting a DPS will necessarily lead to declines in abundance that will undercut overall species recovery. This assumption is—at least—questionable in the case of the GYE grizzly bear DPS.

The ESA left the problem of defining DPS to the USFWS and the National Marine Fisheries Service, but the 1996 USFWS policy acknowledged that it

has no scientific definition. It is a great challenge to define DPSs in a way that would work equally well for species as different as toads (*Bufonidae*) and bald eagles (*Haliaeetus leucocephalus*), salmon (*Oncorhynchus* spp.) and wolves (*Canis lupus*), for all kinds of human-fragmented habitats, and for listing as well as delisting purposes. It would be a remarkable policy that could be stretched to fit over all these needs and withstand scrutiny from attorneys and judges.

The status of GYE grizzly bears

Grizzly bears in the GYE have increased in numbers and distribution over the last 3 decades. These achievements are well documented (USFWS 2005, Schwartz et al. 2006a,d) and seldom disputed. There has been an impressive array of scientific studies on grizzly bears in this area, including >180 peer-reviewed publications by the Yellowstone Grizzly Bear Study Team during 1975–2006. Although uncertainties persist, including the actual population size, there is general agreement that the GYE grizzly bears are the most-studied and best known bear population in the world (International Association for Bear Research and Management 2006).

The grizzly bear recovery plan identified numeric, distributional, and mortality thresholds that would define recovery in the GYE (USFWS 1993). The numeric threshold was exceeded in 1986; distributional targets were achieved in 1998. Controversy exists over whether mortality thresholds have been achieved because these criteria changed over time. However, long-term mortality rates must not have exceeded sustainable levels because the isolated GYE population has increased. Higher mortality rates, especially of young dispersing males, are expected where grizzlies expand into more risky habitats on the periphery of core protected areas (Haroldson et al. 2006, Schwartz et al. 2006b).

Schwartz et al. (2006c) suggest that the grizzly population in the core of the GYE is at carrying capacity and that now population growth is primarily on the periphery of the core. Evidence for this is found in the distribution of mortalities (Haroldson et al. 2006) and in the lower reproductive performance compared with non-core areas into which the population is expanding and where density is below carrying capacity (Schwartz et al. 2006c).

Much of the controversy over delisting derives from differing views about whether the recovery plan criteria justify delisting under the ESA's criteria. Some opponents of delisting in Yellowstone argue that that regulatory mechanisms are inadequate because they may not be fully implemented by state and federal agencies following delisting. Others believe that the package of state plans and the revisions to plans describing how USFS lands will be managed following delisting (Interagency Conservation Strategy Team 2003) constitute adequate regulatory mechanisms. The habitat and demographic protections outlined in the Conservation Strategy are contingent on successful delisting.

Whether the post-delisting activities mandated in the Conservation Strategy will actually occur, of course, depends on the willingness of state and federal agencies to fund and implement them. Neither are guaranteed. However, if delisting of species depended on the existence of such guarantees, no species could ever be delisted because the US Congress and state lawmakers appropriate funds on an annual or biannual basis, and the will of agencies to fund endangered species work varies. Congress clearly did not intend for delisting to be contingent on criteria that are administratively impossible to achieve.

The *Grizzly bear recovery plan* (USFWS 1993) defines a recovered population for the GYE in an area formerly called the Yellowstone "recovery area" and now called the "Primary Conservation Area" (PCA; Fig. 1). The PCA includes 23,850 km², of which National Parks constitute 39.4%, National Forests 58.5%, and other land ownerships 2.1% (Interagency Conservation Strategy Team 2003). Within the PCA, the Conservation Strategy provides for higher levels of protections for grizzly bear habitat than currently exists with the species listed as threatened. As a listed species, constraints on developments such as road building and logging flow from ESA § 7 that calls for developers to consult with the USFWS before undertaking actions that may harm listed species. In practice, such consultations commonly result in mitigating potential effects rather than stopping the proposed development. In contrast, the Conservation Strategy calls for secure habitat, livestock allotments, and site developments (e.g., trailheads, campgrounds, lodges, oil and gas wells) on USFS and National Parks lands within the PCA to be maintained at no less than levels that existed in 1998 (a period when the habitat conditions were adequate as demonstrated by a clearly growing population).

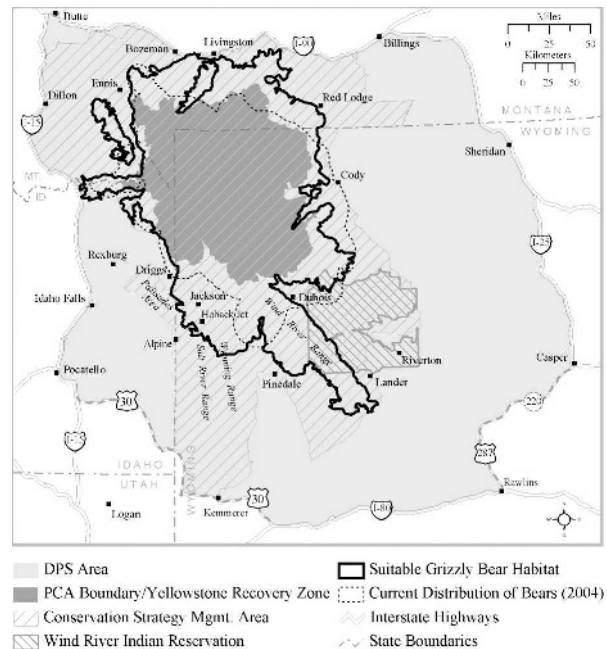


Fig. 1. The boundary of the proposed distinct population segment (DPS) defined for delisting grizzly bears in the Greater Yellowstone Ecosystem. Boundaries for the Primary Conservation Area, suitable grizzly bear habitat, and current grizzly distribution are also illustrated (map from U.S. Fish and Wildlife Service [2005]).

On USFS lands outside the PCA, grizzlies will be classified as a species of concern with habitat (including helpful provisions for addressing conflicts with livestock) and demographic protections (including mortality quotas that apply to a larger area than currently) that do not currently exist. Outside the PCA, habitat protections post-delisting could result in greater or lesser protections than currently exist with the grizzly bears as a listed species.

A population viability analysis for GYE grizzly bears concluded that the likelihood of persistence for grizzly bears in the GYE for 100 years was 99.2% (Boyce et al. 2001). Over 500 years the estimated likelihood of persistence was 96.1%. This study estimated only demographic viability. Because of uncertain or absence of data, threats from stochastic variability in environmental changes (such as from climate change) were not included in the Boyce analysis.

The GYE grizzly bear DPS

The GYE grizzly bear DPS is not an abstract concept; it is a real piece of ground (Fig. 1). It

includes all suitable grizzly habitat in the GYE identified by the USFWS. The DPS was delineated using roads as recognizable landmarks and includes the current distribution of the GYE population plus area for population expansion (Fig. 1). The closest grizzly population to Yellowstone is the Northern Continental Divide (NCDE) population. One NCDE male grizzly is known to have been <100 km from the current GYE grizzly distribution before being killed (C. Servheen, US Fish and Wildlife Service, Missoula, Montana, USA, unpublished data).

Rosen states that in a revised DPS policy “there should likely continue to be some form of relative isolation requirement” (2007:113). Rosen further agrees with USFWS (2005) that the GYE population was not always isolated and that connectivity to other populations could be reestablished. On the discreteness requirement, Rosen appears to assert that the GYE is not an eligible DPS because it was probably less isolated at one time than it is now. However, she also argues that isolation is important to qualify a population as a DPS. Rosen’s logic is difficult to follow on discreteness; she appears to argue that a DPS cannot qualify if it is not isolated, but neither can it qualify if its isolation is due to human activities. Under such a concept, only a population in the process of evolutionary speciation through long-term and natural isolation would qualify as a DPS. For grizzly bears in North America, only the populations on large islands in Alaska (e.g., Kodiak, Admiralty) could meet such a standard.

The 1996 DPS Policy provided a pragmatic and functional approach to identifying DPSs, one that promoted conservation of populations in the real world where populations of listed species confront human-induced threats of numerous kinds that are resolved at different speeds in different areas. The policy (1996:4725) explained that:

With regard to the discreteness standard, the Services believe that logic demands a distinct population recognized under the Act be circumscribed in some way that distinguishes it from other representatives of its species. The standard established for discreteness is simply an attempt to allow an entity given DPS status under the Act to be adequately defined and described. If some level of discreteness were not required, it is difficult to imagine how the Act could be effectively administered or enforced. At the same time, the standard adopted does not require absolute separation of a DPS from other members of its species, because this can rarely be demonstrated in nature for any population of organisms. The standard adopted is believed to allow entities

recognized under the Act to be identified without requiring an unreasonably rigid test for distinctiveness.

Connectivity to other populations is biologically important, and it would be a foolish policy that mandated isolation in the service of conservation. The delisting proposal addresses the current isolation of the GYE population by specifying that efforts will continue to establish linkages between GYE and other grizzly populations. Because these linkage zones include private lands, and because private landowners frequently fear losing land use options due to the presence of listed species on their lands (Czech and Krausman 2001), delisting GYE grizzlies could facilitate development of linkage corridors to and from the GYE if private landowners were more tolerant of grizzly bears under state rather than federal management.

DPSs for other species

I agree with Rosen (2007) that the USFWS has not always implemented its DPS policy wisely or appropriately. An example is the 2003 effort to identify and delist wolves in 2 DPSs. Wolves have achieved biological recovery in Minnesota, Wisconsin, and Michigan, but the FWS’s originally proposed eastern DPS also included the wolf-free northeastern quarter of the US and the northern Great Plains states. Similarly, the proposed western DPS included not just Montana, Idaho, and Wyoming where wolf populations have met most recovery criteria; it also included the west to the Pacific coast. Federal district courts rejected these overly-expansive DPSs as violating the ESA and the intent of the DPS policy (*Defenders of Wildlife et al. v. Norton* [January 2005 US District Court in Oregon] and *National Wildlife Federation et al. v. Norton* [August 2005 US District Court in Vermont]). In contrast to the originally-proposed, geographically expansive (and legally rejected) DPSs for wolves, the proposed GYE grizzly DPS is geographically conservative and includes all suitable habitat in the GYE, most of which is currently occupied by grizzlies (Fig. 1).

The ESA makes it clear that its purpose is to recover species, not to keep them perpetually listed. The ESA identifies its purpose as “... to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved, to provide a program for the conservation of such endangered species and threatened species....”(ESA § 2). Further, the ESA defines ‘conserve,’

‘conserving,’ and ‘conservation’ to mean “...to use...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...” (ESA § 3).

The most appropriate way to analyze the USFWS DPS policy is to examine whether it furthers the purpose of the ESA of recovering and delisting listed species, subspecies, or DPSs (*sensu* Scott et al. 2005). When recovery has occurred, the ESA has done its job and it is necessary and appropriate to celebrate victory in that battle while continuing efforts to both secure that victory and, ultimately, achieve others in the larger war to maintain biodiversity.

As a practical matter, different jurisdictions and geographical areas have differing abilities to achieve recovery of grizzly bears. Recovery efforts are abetted in areas like the GYE that have large national parks and wilderness areas at their core. The popularity of Yellowstone National Park has also helped focus efforts by state and federal land use management agencies, as well as conservation organizations, to recover grizzly bears in the GYE. In contrast, progress toward recovery in the Bitterroot Recovery Area (central Idaho) that is not centered on a national park has been limited to preparatory work for reestablishment of an extinct population. Large steps toward grizzly recovery can be made in the Bitterroot Ecosystem while only relatively small steps remain to be made in the GYE.

I question whether the grizzly bear recovery in the GYE would have occurred (and I’m confident progress would have been slower) had the DPS approach recommended by Rosen (2007) been in place for the last 2–3 decades. When the USFWS assumes management under the ESA for listed species, the federal government assumes primary management authority from the states. However — regardless of whether it was the intent of Congress — listing grizzly bears in Yellowstone has also provided an incentive for states to cooperate in recovery efforts.

I contend that if the GYE population could not be delisted until recovery was achieved in the other defined ecosystems, state wildlife managers in the GYE area would have reduced incentive to cooperate with recovery efforts because delisting in places where they can affect recovery would be hostage to policies beyond their control. Participation in recovery, research, and monitoring by the states of Montana, Wyoming, and Idaho has been critical to the success of recovery efforts in the GYE.

Over the last 2 decades, the staff and financial contributions by these 3 states toward GYE grizzly bear recovery has substantially exceeded that provided by the USFWS (C. Servheen, personal communication, 2006).

Through the Conservation Strategy, what exists in the GYE DPS is, in essence, what Scott et al. (2005) indicated was a necessary third ESA category. These authors recognized that delisted species and DPSs would continue to require conservation attention as conservation-reliant species, and that in this intermediate category “...the key issue becomes whether there is a reasonable certainty that the human intervention will continue” (Scott et al. 2005:385). Recovery Management Agreements, legally binding and biologically defensible contracts between federal wildlife agencies, other federal agencies, state, local and tribal governments, and private entities, would need to be in place for conservation-reliant species (Scott et al. 2005). The description of these agreements by Scott et al. (2005) accurately parallel what is provided by the Conservation Strategy for grizzly bears in the GYE (Scott et al. 2005:385).

...a new, more nuanced view of recovery is needed to replace the simplistic “not recovered/recovered” dichotomy and to recognize the role of active conservation management. If a species can be delisted when there is a reasonable certainty that the human intervention needed to sustain the species in the wild will be supplied, then the objective of the ESA becomes one of fostering that intervention.

In the Yellowstone grizzly bear DPS, this intervention has been fostered. The next steps are to assure that backsliding does not occur and to transfer this successful recovery model to grizzly bears in other areas and to other species and DPSs.

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