United States Department of the Interior

FISH AND WILDLIFE SERVICE
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MEMORANDUM

To: Assistant Regional Director – Ecological Services, Albuquerque, NM

From: Regional Director, Southwest Region, Albuquerque, NM

Subject: Policy on Genetics in Endangered Species Activities

Attached please find a discussion paper regarding the use of genetics in Endangered Species Act decisions. There has been much uncertainty about the legal ability to use and include genetics considerations in both listing and recovery actions, both within the Service and in public discussions. The "Alsea Case" brought significant legal interpretation to the issue, and our policy will be to follow the intent of that case unless or until more specific guidance is provided at the national level.

As such, genetics must be considered during the evaluation process for listing decisions to determine if genetic concerns significantly contribute to the threats facing a species. In recovery planning, genetic discussions should be limited to reducing or minimizing threats to the species so that the protection of the Act is no longer needed. Please ensure that all staff and members of recovery teams are aware of this legal guidance.

If you have questions, please contact me.

H. Dale Hall

GENETICS AND THE ENDANGERED SPECIES ACT
A DISCUSSION PAPER

Introduction

Since its passage in 1973, the Endangered Species Act (ESA) has undergone significant evolution in how it is implemented. Numerous Federal Court decisions have guided changes in interpretation and decision-making, particularly insofar as the limits of the law are concerned. For approximately the first 17 years of its life, the ESA was administered by the U.S. Fish and Wildlife Service (FWS) and the National Marine Fisheries Service (NMFS), now known as NOAA Fisheries, with little challenge to the supremacy of the agency decision. The initial northern spotted owl Federal Court decision requiring the FWS to propose critical habitat in February, 1991, and the numerous other challenges and decisions that followed created significant change.

Among the challenges that surface more and more in listing and recovery discussions is how to view genetic differences. In the implementing regulations that direct FWS activities under the ESA, the only reference to genetics is found in the exclusion of hybrids to receive the protection of the law. There are only three "listable entities" that meet the definition of "species" in the ESA: species; subspecies and distinct vertebrate population segment. Within a species, however, there can be and often are differences in genetics, while still satisfying the requirement of being a member of the species. In listing, these differences are often examined to determine if the entity should be listed as species, subspecies or distinct vertebrate population segment. The ESA, by definition, expects the FWS (or NOAA Fisheries) to address this question at the time of listing and makes no specific reference to genetics in the law. So, how should genetics be considered in the formulation of listing decisions or actions proposed in a Recovery Plan that would guide the public to conserve the species and remove it from the protection of the law?

Listing Criteria

The purpose of the ESA is 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, and to take such steps as may be appropriate to achieve the purposes of the treaties and conventions set forth in subsection (a) of this section" (Section 2(b)). The Secretary is instructed in Section 4(a) of the Act to promulgate regulations to determine whether any species should be placed on the list of threatened or endangered species based upon five factors:

(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.

These five factors determine the qualification of a species to be either added to the list or removed from it, and are commonly referred to as the threats that must be addressed. Thus, the rule published for public comment that would list the species must specifically address each of these factors and, if the species is to be listed, must find one or more of the factors germane to the potential extinction of the species.

The question of genetics is appropriate at this point to determine which entity under the definition of a species is to be pursued, as well as to assess genetic-related threats to the entity. If there are isolated segments of the population that are genetically distinct, do not significantly interbreed in nature and are significant to the survival and health of the species, then the determination should be made to list them as Distinct Population Segments (DPS). If, however, this is either not the case or is not done for other reasons, then all members of the population that qualify as the "species" are protected as one entity with no distinction made based on genetic differences.

Recovery Plans

Section 4(f)(1) of the ESA states:

> "The Secretary shall develop and implement plans (hereinafter in this subsection referred to as 'recovery plans') for the conservation and survival of endangered species and threatened species listed pursuant to this section, unless he finds that such a plan will not promote the conservation of the species."

The subsection goes on to identify three priorities to drive the recovery planning process: 1) give priority to species in most need of a plan, particularly those threatened with construction or other development (one of the five factors); 2) they must include objective, measurable criteria which, when met, would lead to the removal of the species from the list (when will the identified threats be considered addressed?); and 3) an estimate of the time required to recover and the costs required to meet the goals. None of the directives in constructing recovery plans gives any recognition to genetic divergence within the listed species unless they were identified at the time of listing. The management goals that would be required for de-listing are directly related to the threats that precipitated the listing.

In reality, many species are listed that have such low population levels (and commensurate genetic material) that genetics is not a luxury at our disposal. It is, therefore, clear that recovery plans cannot require special consideration of previously unidentified genetic diversity before a species can be removed from the list. Genetic differences must be addressed during the listing process to determine what

"species" is being proposed. Once that is done, there can be no further sub-division of the entity because of genetics or any other factor unless a new listing proposal is forwarded that would change the status of the "species" (e.g. from a subspecies to a DPS). Further, the recovery criteria recommended in a Recovery Plan must show a clear connection with the threats identified through the five factors evaluated in the listing process.

Recovery Units are often identified in Recovery Plans to achieve a myriad of objectives, from habitat quality and geographic distribution to species dispersal. However, the jeopardy determination cannot be based on impacts to a particular Recovery Unit. The FWS Consultation Handbook discusses Recovery Units as being for "management purposes". On page 4-34 of the Handbook, it states:

> "The determination of **jeopardy** or **adverse modification** is based on the effects of the action on the continued existence of the **entire** population of the listed species or on a listed population, and/or the effect on critical habitat as designated in a final rulemaking." (emphasis as in text)

This directive makes the consideration of the "species" holistic rather than fragmented. In specific reference to Recovery Units, page 4-36 states:

> **"In the past, exceptions from applying the jeopardy standard to an entire species were granted by memorandum for specific populations or 'recovery units' of a species. That process of limiting the exceptions to those populations/recovery units listed in a memo is hereby discontinued and all future exceptions will adhere to the following guidance."** (emphasis as in text)

The exceptions identified following this paragraph required specific notice published in the Federal Register of such Recovery Units in a draft Recovery Plan that are emphasized as essential to the survival and recovery of the species. Thus, the philosophy of ensuring that the "species" as a whole is the object of recovery actions is reinforced in the FWS Handbook. Deviation from this approach to place special legal requirements or status for genetic lineages or portions of a population as a requirement for removal from the list would place the FWS in a risky, and possibly indefensible, position.

<u>Alsea Valley Alliance v. Evans</u>

One of the more recent challenges to an agency decision was that of the Alsea Valley Alliance, and Mark Sehl v. Donald L. Evans, et al*. On August 10, 1998, NOAA Fisheries (at that time, NMFS) published a final rule listing the Oregon Coast Evolutionary Significant Unit (ESU), the equivalent of a FWS DPS, of coho salmon as threatened. The plaintiffs subsequently brought suit against NOAA Fisheries and the Department of Commerce alleging that the exclusion of hatchery reared fish of the same genetic makeup from consideration in the listing decision was arbitrary and capricious.

NOAA Fisheries decision excluded hatchery reared fish, even though they were occupying the same space in the river at the same time, because they believed hatchery spawned fish could be inferior to naturally spawned fish. As such, their position was that hatchery fish could not be considered as "members of the population" and were excluded from estimates of population health.

On September 10, 2001, Federal District Judge Michael R. Hogan ruled in favor of the plaintiffs and found the NMFS decision to exclude hatchery fish to be arbitrary and capricious. In his decision, he stated:

> "After reviewing the administrative record and the relevant statutes and legislative history, the court finds that the NMFS August 10, 1998 listing decision is arbitrary and capricious and therefore invalid because it relied on factors upon which Congress did not intend the NMFS to rely. The NMFS decision defines the ESU and thus DSP (sic), but then takes an additional step, beyond its definition of an ESU, to eliminate hatchery coho from its listing decision".

The court found that the NOAA Fisheries defined the DPS and then decided to declare some members of the population (the wild stock) in the definition and other members of the population (hatchery stock) outside the definition. Judge Hogan went on to address this point.

> "The central problem with the NMFS listing decision of August 10, 1998, is that it makes improper distinctions, below that of a DPS, by excluding hatchery coho populations from listing protection even though they are determined to be part of the same DPS as natural coho populations." "Listing distinctions below that of subspecies or a DPS of a species are not allowed under the ESA."

He further stated:

> "The distinction between members of the same ESU/DPS is arbitrary and capricious because NMFS may consider listing only an entire species, subspecies or distinct population segment ("DPS") of any species. 16 U.S.C. s. 1532(16). Once NMFS determined that hatchery-spawned coho and naturally spawned coho were part of the same DPS/ESU, the listing decision should have been made without further distinctions between members of the same DPS/ESU."

At another point, he said:

> "In addition, hatchery spawned and natural coho are the same species."
> "...Although I agree with the general concept that 'genetic diversity' is one factor in the long term success of a threatened species, and thus is one of many underlying goals of the ESA, genetics cannot, by itself, justify a listing distinction that runs contrary to the definition of a DPS."

While the Alsea decision was based on a listing action, the legal interpretation of the court sends a clear message to NOAA Fisheries and FWS that the law has strict criteria for all decision-making, and we are not at liberty to superimpose additional terms of definition. The use of genetic strains or lineages in recovery planning holds the same truth. The species that was defined in the listing action must find its consistent counterpart in the definition of recovery. To have special requirements for subsets of the species in order to satisfy recovery goals is equivalent to the NOAA Fisheries decision to exclude bonafide members of the species from consideration in their listing determination.

An example might be that a listed fish species is found in seven populations and there is evidence that some genetic difference exists, but not enough that the species was listed as distinct population segments. In viewing goals for conservation, the Recovery Team might wish to ensure that all genetic strains remain represented in the recovered population. This would certainly be a legitimate management goal, but could not be required in order to satisfy criteria for delisting as it would represent a further sub-division of the listed species not identified in the original listing action. The legal interpretation is that all seven populations represent only one listed population, and all members are equally legitimate members of the recovery goal. As such, meeting population and/or geographic distribution targets is the legal criterion, not a subset based on genetic differences that were not addressed in the rulemaking process. To require that the specific genetics of all the stream lineages be maintained and improved would not meet the directives of the ESA and would be well placed under the errors of the Oregon coho salmon ESU listing.

This same tenet holds true when the gene pool has been so reduced that proper genetic management is impractical. Often times we have so few members of the population that it is impossible to achieve the level of genetic diversity that once existed. California condor, Mexican gray wolf and others are examples where the original gene source was so limited, little hope exists to re-infuse the genetic diversity formerly present. However, management actions can be taken to make the most of the genetic viability remaining. These recommendations should be included in a Recovery Plan and implemented if possible, and carried forward in management of the species post de-listing. It would, however, be inappropriate to require genetic standards for delisting when so little remains of the gene pool. The actual objective would more closely ally with geographic distribution of the species rather than an unobtainable, and legally inappropriate, emphasis on genetics. All members of the listed "species" share equal value and make equal contributions under the ESA.

Use of Genetics in Recovery Plans

While it is clear we cannot make arbitrary subdivisions of the listed entity in the recovery planning process, knowledge of species' genetics has a valuable role in recovery. Recovery plans have various sections that identify what science and information is at

hand on the biology and plight of the species, what actions might help remove or mitigate the threats to the species, and what specific targets should be achieved to move a species from endangered to threatened, or threatened to delisting. If there are genetic differences within a listed entity, we cannot require that certain lineages or gene pools be managed before a species can be removed from the list, but we should encourage management recommendations that promote the genetic viability of the listed entity.

Conclusion

While it is appropriate to take all reasonable steps to recover a species, those steps must be checked throughout the process to ensure they meet the legal authorities of the FWS. To superimpose a new, more restrictive, taxonomic identity to an entity that was listed in conformance with the Administrative Procedures Act, the ESA and involved public participation would be inappropriate and inconsistent with the law. Genetic information, however, does offer significant assistance when used properly as recommendations for management of the species before and during listing, as well as after removal from the list.

*United States District Court for the District of Oregon. Case No. 99-6265-HO. Alsea Valley Alliance, and Mark Sehl v. Donald L Evans, Secretary of the United States Department of Commerce; National Marine Fisheries Service; Penelope Dalton, NMFS Director; and William Stelle, NMFS Regional Director for the Northwest Region.