Marine Conservation Alliance
promoting sustainable fisheries to feed the world

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Adak Community Development Corporation
Alyeska Seafoods
Alaska Crab Coalition
Alaska Longline Co.
Alaska Whitefish Trawlers Association
Alaska Groundfish Data Bank
Alaska Pacific Seafoods
Alaska Scallop Association
Aleutian Pribilof Island Community Development Association
Akutan, Atka, False Pass, Nelson Lagoon, Nikolski, St. George
At-Sea Processors Association
Bristol Bay Economic Development Corporation
Aleknagik, Clark's Point, Dillingham, Egegik, Ekuk, Ekwok, King Salmon, Levelock, Manokotak, Naknek, Pilot Point, Port Heiden, Portage Creek, South Naknek, Togiak, Twin Hills, Ugashik
Central Bering Sea Fishermen's Association
St. Paul
City of Unalaska
Coastal Villages Region Fund
Chefornak, Chevak, Eek, Goodnews Bay, Hooper Bay, Kipnuk, Kongiganak, Kwigillingok, Mekoryuk, Napakiak, Napaskiak, Newtok, Nightmute, Oscarville, Platinum, Quinhagak, Scammon Bay, Toksook Bay, Tuntutuliak, Tununak
Groundfish Forum
High Seas Catchers Cooperative
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Mothership Group
PV Excellence
PV Ocean Phoenix
PV Golden Alaska
Norton Sound Economic Development Corporation
Brevig Mission, Diomede, Elim, Gambell, Golovin, Koyuk, Nome, Saint Michael, Savoonga, Shaktoolik, Stebbins, Teller, Unalakleet, Wales, White Mountain
Pacific Seafood Processors Association
Alaska General Seafoods
Alyeska Seafoods, Inc.
Golden Alaska Seafoods, Inc.
North Pacific Seafoods, Inc.
Peter Pan Seafoods, Inc.
Premier Pacific Seafoods, Inc.
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Unisea Fleet Cooperative
Westward Fleet Cooperative
U.S. Seafoods
Waterfront Associates
Western Alaska Fisheries, Inc.
Yukon Delta Fisheries Development Association
Alakanuk, Emmonak, Grayling, Kotlik, Mountain Village, Nunam Iqua

February 11, 2011

Ms. Kaja Brix
Assistant Regional Administrator
Protected Resources Division
National Marine Fisheries Service
Juneau Federal Building
709 West 9th Street, Room 420A
P.O. Box 21668
Juneau, AK 99802-1668

Attention: Ellen Sebastian

RE: Comments on EDPS Delisting. RIN #0648-XA046

Dear Ms. Brix:

On behalf of the Marine Conservation Alliance ("MCA"), I am pleased to submit comments on the Request for Information regarding the petitions to delist the eastern distinct population segment ("DPS") of the Steller sea lion ("SSL") pursuant to the Endangered Species Act ("ESA"). 75 Fed. Reg. 77602 (Dec. 13, 2010).

MCA is a broad based coalition of harvesters, processors, coastal communities, Community Development Quota organizations, and support service businesses involved in the groundfish and shellfish fisheries off Alaska. MCA was formed to promote the sustainable use of North Pacific marine resources by present and future generations. MCA supports research and public education regarding the fishery resources of the North Pacific and seeks practical solutions to resource conservation issues. Our members collectively represent approximately 70% of the production of the North Pacific fisheries which in turn accounts for over half of the nation's fishery production.

MCA believes there is a threshold issue that must be considered before any decision can be made regarding delisting the eastern SSL DPS. That issue is whether there is a valid legal and scientific justification for dividing the overall SSL population into an eastern DPS and a western DPS. MCA believes no such justification exists for the reasons set forth in MCA's letter of October 14, 2010, attached hereto as Appendix 1, and incorporated by reference into these

Comments. The agency's December 13, Federal Register notice fails to address the issues raised in MCA's October 14 letter.

Unless and until this threshold issue is addressed, it is premature to make a determination regarding the listing status of that portion of the SSL population now designated as the eastern DPS. Therefore, MCA recommends that a final decision on the pending petitions referenced in the December 13, 2010 Federal Register notice be held in abeyance until NMFS addresses the larger issue of whether the current DPS designations remain valid.

Sincerely,

Frank Kelty
President

Encl: MCA letter of October 14, 2010 on SSL EDPS

cc. Governor Sean Parnell, State of Alaska
Governor Christine Gregoire, State of Washington
Governor Ted Kulongoski, State of Oregon
Senator Lisa Murkowski
Senator Mark Begich
Senator Patty Murray
Senator Maria Cantwell
Congressman Don Young
Honorable Gary Locke, Secretary of Commerce
Dr. Jane Lubchenco, Undersecretary of Commerce for Oceans and Atmosphere
Dr. Eric Schwaab, NOAA Assistant Administrator for Fisheries
Chairman Eric Olson, North Pacific Fishery Management Council

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Alakanuk, Emmonak, Grayling, Kotlik, Mountain Village, Nunam Iqua

October 14, 2010

Via Electronic Mail

Ms. Kaja Brix
National Marine Fisheries Service
Protected Resources Division
P.O. Box 21668
709 West 9th Street
Juneau, Alaska 99802

Dear Ms. Brix:

On behalf of the Marine Conservation Alliance ("MCA"), I am pleased to submit comments on the five-year review of the eastern Distinct Population Segment ("DPS") of the Steller sea lion ("SSL") pursuant to the Endangered Species Act ("ESA"). 75 Fed. Reg. 37385 (June 29, 2010).

MCA is a broad based coalition of harvesters, processors, coastal communities, Community Development Quota organizations, and support service businesses involved in the groundfish and shellfish fisheries off Alaska. MCA was formed to promote the sustainable use of North Pacific marine resources by present and future generations. MCA supports research and public education regarding the fishery resources of the North Pacific and seeks practical solutions to resource conservation issues. Our members collectively represent approximately 70% of the production of North Pacific fisheries which in turn accounts for over half the nation's fishery production.

The Federal Register notice announcing the five-year review states the National Marine Fisheries Service ("NMFS"), as part of the species status review, is also considering the DPS designation for the eastern SSL DPS. 75 Fed. Reg. at 37386. The necessary corollary is that NMFS is considering whether the original designation of a western SSL DPS and an eastern SSL DPS remains valid. MCA will focus its comments on this issue.

I. Summary

Pursuant to existing policy adopted by the Congress and NMFS, and affirmed by the courts, a DPS designation can be made only when a preponderance of the best scientific data shows conclusively that the designation is warranted. The existing DPS designations fail this evidentiary standard.

The existing DPS designations are based mainly on genetic evidence from a single 1996 study alleging a marked genetic separation between SSL populations. The evidence relied on for the DPS designations addressed only a subset of the entire SSL population. This contravenes the ESA and court decisions requiring that NMFS must consider the entire population.

The consideration of all the available evidence for the entire population shows strong genetic similarities between the DPSs. It also shows the physical movement of SSLs across the DPS boundary. In fact, animals from the supposedly separate and distinct DPSs are routinely moving back and forth across the supposed barrier separating them. The available evidence also shows that animals from the supposedly separate and distinct DPSs are interbreeding and females from one DPS are establishing breeding colonies in the other DPS, effectively defeating any allegation of genetic separation. Finally, the evidence shows that even if females often return to the same rookery to give birth to their pups, male mediated gene flow is sufficient to prevent the marked genetic differentiation required for a DPS designation. In short, compelling genetic, breeding, behavioral, and migratory evidence gathered since the original DPS designations show that the existing designations fail to meet the applicable legal and evidentiary standards for a DPS.

II. The Evidentiary Standard for DPS Designations

The current DPS designation is legally defective because it is contrary to Congressional intent and to the DPS designation policy adopted by NMFS. The intent of Congress is reflected in the policy adopted by NMFS and the Fish and Wildlife Service ("FWS") in 1996 regarding DPS designations, 61 Fed. Reg. 4722 (Feb. 7, 1996) ("DPS Policy"). The DPS Policy states Congress intended that DPS designations be used "sparingly." S. Rept. 151, 96th Congr., 1st Sess., at 6, cited at 61 Fed. Reg. 4725. The sentence in the Senate Report cited with approval in the DPS Policy also states a DPS designation should occur "only when the biological evidence indicates such action is warranted." *Id.* (Emphasis added.) Courts considering whether the DPS Policy requires NMFS to follow this Congressional intent have held "[t]he DPS Policy expressed an intent to follow that instruction." *Northwest Ecosystem Alliance v. United States Fish and Wildlife Service*, 475 F.3d 1136, 1144 (9th Cir. 2007).

Congress elaborated further on the appropriate evidentiary standard for DPS designations stating that listing a DPS "may be necessary when the "preponderance of evidence indicates that a species faces a widespread threat but conclusive data is available with regard to only certain populations." S. Rept. 151, 96th Cong., 1st Sess., at 6 (emphasis added). In a recent decision, the United States Court of Appeals for the Ninth Circuit noted with approval the fact that in applying the Evolutionary Significant Unit ("ESU") Policy, the admitted twin of the DPS Policy, NMFS used the Congressionally mandated standard that there must be "conclusive evidence" to justify a DPS listing. *Modesto Irrigation District v. Guiterrez*, No. 09-151214, 2010 WL 3274499 (9th Cir., Aug. 20, 2010) at *3.

Congress intended that NMFS be held to a high evidentiary standard in making a DPS designation. NMFS, together with FWS, has incorporated that intent into the DPS Policy. The courts have approved this evidentiary standard. The existing DPS designation failed to meet the required evidentiary standard in 1997 and new scientific information and data developed since the 1997 designation further demonstrates that failure.

III. The Discreteness Standard For DPS Designations

According to the DPS Policy, the first threshold a population segment must cross to qualify as a DPS is that it must be discrete. 61 Fed. Reg. at 4725. To be discrete, a population segment must meet one of two conditions. One condition, that it be delimited by international governmental boundaries, was nowhere mentioned in the SSL DPS designation. Therefore, this condition cannot be a basis for any discreteness finding. The second condition is that the population segment is "markedly separated" from other populations of the same taxon because of (1) physical, (2) physiological, (3) ecological, or (4) behavioral factors. *Id.* Genetic or morphological discontinuity may provide evidence of this separation. *Id.*

At the outset, it is important to understand the required framework for analysis. First, as noted above, Congress established an evidentiary standard, incorporated by reference into the DPS Policy, that a DPS designation may be made only when the preponderance of biological evidence shows conclusively that it is warranted. Second, the words "marked separation" contain two different standards. There must first be a separation and then that separation must be marked. The existence of genetic differences by themselves is insufficient. There must be marked differences. In that regard, the DPS Policy states the word "marked" is to be given its "commonly understood" sense. *Id.* at 4723. Courts have construed the commonly understood meaning of "markedly" to be "appreciably." *Nat'l Ass'n of Homebuilders v. Norton*, 340 F.3d 835, 851 (9th Cir. 2003), *citing* Webster's New World Dictionary. Finally, the evidence used for this determination must be the best scientific and commercial data available. 16 U.S.C. §1533(b)(1)(A). As the Supreme Court has held: "The obvious purpose of the requirement that each agency 'use the best scientific and commercial data available' is to ensure that the ESA not be implemented haphazardly, on the basis of speculation or surmise." *Bennett v. Spear*, 520 U.S. 154, 176 (1997) (emphasis added). The discreteness finding for the existing DPSs meets none of these standards.

A. The DPS Policy Factors

NMFS reclassified SSLs into eastern and western DPSs in 1997. 62 Fed. Reg. 24345 (May 5, 1997) ("1997 Final Rule"). The 1997 Final Rule neither discussed nor relied on physical, physiological, ecological, or behavioral factors as a basis for the DPS designations. Thus, none of the four standards for a DPS designation set forth in the DPS Policy were used as a basis for

the SSL DPS designations. Instead, NMFS relied exclusively on alleged genetic differences. *Id.* at 24346, 24349.[1]

B. The Genetic Evidence

In considering the genetic "evidence," a fourth legal and evidentiary issue arises in addition to the three discussed above. The courts have been clear that the ESA "preclud[es] any listings below the ESU/DPS level." *Modesto Irrigation District v. Gutierrez,* 2010 WL 3274499 at *3. In *Alsea Valley Alliance v. Evans,* 161 F.Supp.2d 1154 (D. Ore. 2001), the court conducted a lengthy review of the legislative history of the amendment adding the existing DPS language to the ESA. The court's words and its citation to that legislative history are instructive.

> The term "distinct population segment" was amended in the ESA in 1978 so that it "would exclude taxonomic [biological] categories below subspecies [smaller taxa] from the definition." H.R. Conf. Rep. No. 95-1084, at 17 (1978) …. Congress expressly limited the Secretary's ability to make listing distinctions among species below that of subspecies or distinct population segment of a species.

Id. at 1163.

These judicial precedents are fully consistent with court decisions regarding other ESA sections. Section 7(a)(2) requires that federal agencies not undertake, authorize, or permit actions that are likely to jeopardize the continued existence of a listed species, which is defined to include DPSs. 16 U.S.C. §1536(a)(2), 16 U.S.C. §1532(16). In *Rock Creek Alliance v. United States Fish and Wildlife Service,* 390 F.Supp.2d 993 (D. Mont. 2005), the issue was an agency determination that a proposed action would not jeopardize the continued existence of a DPS. Plaintiffs challenged that finding arguing that some subpopulations of the DPS would be jeopardized by the agency action. The court rejected this argument, finding FWS must examine the status of the listed species "across its entire range" before making a jeopardy determination. *Id.* at 1010.

To designate a DPS, NMFS must examine whether the entire proposed DPS is markedly separate. NMFS cannot limit its examination to a subset of the DPS. To do so would be listing

[1] The 1997 Final Rule states that population trend data showing a stable population in the eastern DPS and a declining population in the western DPS lend support to the DPS designation. Population trends are not a legally cognizable basis for DPS designation under the DPS Policy. Therefore, this basis for the DPS designation is legally insufficient. Furthermore, if information about the population trend is used in the DPS designation the DPS definition will change as the population trends change. Clearly, a robust definition of a DPS would be immune to this kind of effect. The fact that different *ad hoc* groupings within a population show different trends is not a basis for saying they are distinct. In fact, these opposite trends could be an indication of connected populations if opposite trajectories of neighboring segments are due to directional migration between those segments. For example, Boyd suggested this in his recent analysis of SSL status, Assessing the effectiveness of conservation measures: resolving the "wicked" problem of the Steller sea lion. Author(s): Boyd, I.L. Source: BIOLOGICAL CONSERVATION, Volume: 143, Issue 7, Pages 1664-1674, 2010.

below the DPS level. Applying this well established ESA legal principle to the current DPS designation, NMFS cannot examine the genetic structure of only pups or only adult females and then conclude the entire DPS, male and female, juvenile and adult, should be designated as a DPS. The reality is that the Final Rule improperly alleged genetic separation based on an examination of only a subset of the entire DPS. 62 Fed. Reg. at 24346. The study relied on by NMFS, and many subsequent studies, focused only on samples of pups at a subset of rookeries. By definition, a limited examination of pups is not an examination of the entire DPS, particularly because it cannot account for, or include, migrants and immigrants that may not have entered the breeding population or that were breeding at locations other than those sampled. In short, the sampling methodology relied on in the 1997 Final Rule will yield a biased result and an inaccurate picture of the entire population.

Further, the genetic analysis of pups relied on in the 1997 Final Rule is generally limited to mitochondrial DNA ("mtDNA"). MtDNA is maternally inherited. Thus, the analysis in the 1997 Final Rule generally reflects only female gene flow in pups. Nuclear DNA, on the other hand, is inherited from both parents and reflects total gene flow, *i.e.*, from males and females. Moreover, mtDNA represents only a fraction of the entire genome. Consider that mtDNA is composed of approximately 16,500 nucleotides (DNA building blocks) while nuclear DNA is composed of billions of nucleotides[2]. Because of this, limiting genetic analysis to only mtDNA can yield misleading results. Indeed, patterns of mtDNA differentiation and a corresponding lack of nuclear DNA differentiation are very common in vertebrate species, particularly marine species[3]. For example, brown bears living on islands in Southeast Alaska that are geographically separated from mainland Alaska have different mtDNA haplotypes from mainland bears. However, the key point is that they do not have differentiated nuclear DNA frequencies[4]. In the SSL, genetic differentiation using mtDNA is almost as great within the western DPS as it is between the eastern and western DPSs[5] but many of these differences disappear when nuclear DNA is used[6]. Overall, the genetics show a confused picture of the structure of the SSL population which, in most analyses, also generally fail to acknowledge that the structural features reflected in the genetics are historical and will not reflect current rates of introgression between different subpopulations. As shown by Herreman et al[7], management stocks of harbor seals in

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[2] Mitochondrial-DNA in wildlife taxonomy and conservation biology – cautionary notes. Author(s): Cronin, M. Source: WILDLIFE SOCIETY BULLETIN, Volume: 21, Pages: 339-348, 1993.

[3] Population genetics and phylogeography of sea turtles. Author(s): Bowen BW, Karl SA. Source: MOLECULAR ECOLOGY, Volume: 16, Pages: 4897, 2007.

[4] Gene flow between insular, coastal and interior populations of brown bears in Alaska. Author(s): Paetkau, D., Shields, G.F., Strobeck, C. Source: MOLECULAR ECOLOGY, Volume: 7, Pages: 1283-1292, 1998.

[5] Demographic independence along ecosystem boundaries in Steller sea lions revealed by mtDNA analysis: implications for management of an endangered species. Author(s): O'Corry-Crowe, G., Taylor, B.L., Gelatt T, et al. Source: CANADIAN JOURNAL OF ZOOLOGY, Volume: 84, Pages: 1796-1809, 2007.

[6] Deep genetic subdivision within a continuously distributed and highly vagile marine mammal, the Steller's sea lion (*Eumetopias jubatus*). Author(s): Hoffman, J.I., Matson, C.W., Amos, W., et al. Source: MOLECULAR ECOLOGY, Volume: 15, Pages: 2821-2832, 2006.

[7] Asymmetrical male-mediated gene flow between harbor seal (Phoca vitulina) populations in Alaska. Author(s): Herreman, J.K., Blundell, G.M., McDonald, D.B., et al. Source: CANADIAN JOURNAL OF ZOOLOGY, Volume: 87, Pages: 498-507, 2009.

Alaska previously thought to be distinct based upon mtDNA and population trends are in fact part of a single stock. The facts are that studies done since the 1997 Final Rule consistently report that an examination of the entire genetic structure (*i.e.,* nuclear DNA inherited from both parents) shows markedly less genetic differentiation. Thus, Hoffman et al[8] note that genetic differences are higher for mtDNA markers than for nuclear DNA.

The analytical points are that (1) mtDNA analysis examines only part of the genetic structure of a species, and a small part at that, especially when only pups are used, and (2) examination of the entire DNA gives a far different picture. The legal point is that basing a DPS designation on alleged genetic differences in only one part of the proposed DPS is, in effect, basing the DPS listing on a subset of the population.

1. The 1997 Final Rule Did Not Measure Marked Differences

An accepted scientific basis for finding there is a marked, *i.e.,* appreciable, genetic difference is to conduct a statistical analysis of the extent of the difference. There are accepted and well understood norms for this analysis but those carried out to date are deficient in two important ways. First, they do not, indeed cannot, account for underlying sampling uncertainties emerging from the way in which samples have been collected. These uncertainties involve small sample sizes compared with the overall population available for sampling, a focus on sampling only particular rookeries without an appropriate stratification procedure, and the collection of samples over many years at a time when there may be change in the pattern of gene flow among parts of the SSL population. Second, the studies test a null hypothesis that is different from the legal definition of a DPS. This arises because they test a hypothesis that is examining the historical population structure possibly brought about by historical barriers to dispersal. The statistical tests do not address the current distinctiveness of the populations in the absence of clear and unambiguous physical barriers to dispersal and in the presence of evidence of some level of present day dispersal. Consequently, the statistical analyses of genetics provide a very narrow, and essentially historical, view of the behavioral standard contained in the DPS Policy. The weight given to genetics evidence within the context of the 1997 Final Rule is driving management decisions toward the preservation of a population structure that has no relevance in the present day context.

Another test of the 1997 Final Rule could be the gene flow resulting from migration given that a migration of between one and ten animals per generation is generally considered sufficient to prevent genetic differentiation between populations[9] [10]. A further consideration is the extent of DNA allele and haplotype differences. However, the sharing of alleles and haplotypes even at different frequencies indicates common ancestry and gene flow. Finally, an analysis of the

[8] Contrasting patterns of genetic diversity at three different genetic markers in a marine mammal metapopulation. Author(s): Hoffman, J.I., Dasmahapatra, K.K., Amos, W., et al. Source: MOLECULAR ECOLOGY, Volume: 18, Pages: 2961-2978, 2009.

[9] Conservation implications of complex population structure: lessons from the loggerhead turtle (Caretta caretta). Author(s): Bowen, B.W., Bass, A.L., Soares, L., et al. Source: MOLECULAR ECOLOGY Volume: 14, Page: 2390, 2005.

[10] Asymmetrical male-mediated gene flow between harbor seal (Phoca vitulina) populations in Alaska. Author(s): Herreman, J.K., Blundell, G.M., McDonald, D.B., et al. Source: CANADIAN JOURNAL OF ZOOLOGY, Volume: 87, Pages: 498-507, 2009.

degree of DNA sequence divergence for mtDNA or nuclear DNA can provide insights into genetic differentiation. Nowhere in the 1997 Final Rule was any of this done. The 1997 Final Rule failed to conduct the analyses necessary to determine if the data support a conclusion of marked separation. On this basis alone, the conclusory statements in the 1997 Final Rule regarding the alleged marked genetic separation of the DPSs are unsupportable and fail to meet the required evidentiary threshold.

2. A Review Of Genetic Evidence Shows No Marked Separation

The 1997 Final Rule asserted, based on one study published in 1996, that there was a "distinct break in haplotype distribution" between the sampled eastern and western SSL groupings. 62 Fed. Reg. at 24349. However, more recent and more detailed studies show clear evidence of migration across the eastern and western SSL DPSs, including evidence that migrants are involved in reproduction. This has the obvious implication that gene sharing is occurring at least at the boundary between the eastern and western DPS.

Gelatt et al 2007[11] documented the presence of "western stock" haplotypes at Graves Rock in the eastern DPS zone, 259 nautical miles from the 144° west longitude line dividing the eastern and western SSL DPSs. The White Sisters rookery, even farther south from the Graves Rock rookery in the eastern zone, also showed the presence of "western stock" haplotypes. *Id.* The presence of common haplotypes indicates that even if there was a "distinct break in haplotype distribution" between the eastern and western SSL DPSs in the years preceding 1996, that distinction no longer exists. Indeed, the Graves Rock rookery was established after 1997 by SSLs from the eastern and western DPSs. *Id*. In other words, there is clear physical and genetic movement between the eastern and western SSL DPSs.

A 2010 study by the Alaska Department of Fish and Game[12] confirmed the movement of SSLs between the eastern and western zones and the corresponding gene flow between the two SSL DPSs. The Report states that during the study period 100 eastern born SSLs traveled into the western SSL DPS zone (98 males and 2 females) while 76 western born SSLs (nearly half being females) traveled into the eastern DPS zone. The study concludes that SSLs "regularly travel" between the two DPS zones and that "some [western stock] females were seen within [the eastern zone] annually since a young age, eventually pupping in the eastern zone, suggesting permanent emigration...." The Report goes on to state that immigration from west to east likely contributes to population growth in the eastern DPS. *Id*.

Similarly, materials prepared by Greg O'Corry-Crowe[13] of the NMFS Southwest Fisheries Science Center suggest that some pups born on rookeries in the eastern DPS zone "were fathered by western DPS males."

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[11] Population Trends, Diet, Genetics, and Observations of Steller Sea Lions in Glacier Bay National Park. Authors: Tom Gelatt, Andrew W. Trites, Kelly Hastings, Lauri Jemison, Ken Pitcher, and Greg O'Corry-Crowe, 2007.

[12] Inter-stock movements of Steller sea lions in Alaska, presented at the Alaska Marine Science Symposium by Lauri Jemison and Grey Pendleton found at http//doc.nprb.org/web/symposium/2010/2010%20AMSS%20Abstract%.

[13] Report available at http://www.fakr.noaa.gov/sustainablefisheries/sslmc/june-06/crowe.pdf.

Other studies, though not genetic analyses, also confirm the movement of SSLs between the two DPSs. movements that integrate the populations and allow for interbreeding. For example, a 2009 memorandum prepared by NMFS on the SSL population survey reported that non-pup population counts at trend sites were changing because of season movements of SSLs between the two DPSs.[14] Another NMFS report on the movement of SSLs notes that branded animals travel between the eastern and western DPSs.[15]

The movement of animals between the eastern and western DPS zones is significant for two reasons. First, as noted above, a migration of between one and ten animals per generation (about 10 years in SSLs) is generally considered sufficient to prevent genetic differentiation between populations – an alleged differentiation that was the foundation for dividing SSLs into eastern and western DPSs. Second, this physical movement between DPS zones, including evidence of cross-breeding, establishes the existence of male mediated gene flow (*i.e.*, males breeding regularly and freely with females from different rookeries in different DPS zones). The SSL DPSs cannot be considered genetically distinct if the nuclear genome (*i.e.*, nuclear DNA) is being mixed by male mediated gene flow because of males moving between the zones.

This mixing of genetic material is further documented in several studies published since the 1997 Final Rule, some of which are discussed above. In addition, Bickham 2005[16] reports that haplotype S, the most common haplotype in the database, was found in SSL pups "from Okhotsk to southeastern Alaska." While its frequency differs by region, its existence across both DPS zones calls into question the conclusion in the 1997 Final Rule that there is a distinct break in haplotype distribution between the eastern and western SSL DPSs.

Bickham 2005 goes on to note that haplotype 1 animals are all from the White Sisters Islands rookery in the eastern zone and "likely represent immigrants from the western stock." Further, haplotype 3 was found to be common throughout the western zone, including Asia, "but is also common in southeastern Alaska and British Columbia" in the eastern zone. In the same manner, Baker et al 2005[17] found that two haplotypes (A and BB) were distributed "throughout the entire species range...." While one can also identify haplotypes that are found exclusively or predominantly in the western or eastern zones, the existence of common haplotypes indicates common genetic heritage and genetic mixing. Bickham 2005 explains that there is greater evidence for the movement of individuals among the eastern and western DPSs when examining juveniles than pups and that haplotype frequencies in juveniles show clear evidence of movement across the boundaries. Few other studies appear to have considered juveniles to the same extent and, consequently, have provided a biased view of the rates of emigration currently under way between the eastern and western DPSs

[14] Memorandum to Douglas Mecum, Director Alaska Region, from Douglas DeMaster, Director Alaska Fisheries Science Center, December 2, 2009, at 5-6.
[15] Steller Sea Lion Brand Sighting, Report of the National Marine Mammal Laboratory, June 2009.
[16] Variation in mitochondrial DNA of Steller sea lions: Cytochrome b and control region sequences from juveniles and pups from western stock rookeries. Report to Dr. T.S. Gelatt from Dr. J.W. Bickham, March 7, 2005.
[17] Variation of mitochondrial control region sequences of Steller sea lions: The three-stock hypothesis. Author(s): Baker, A.R., Loughlin, T.R., Burkanov, V., et al. Source: JOURNAL OF MAMMALOGY, Volume: 86, Pages: 1075-1084, 2005.

In considering the marked separation issue in the context of genetics, it may also be helpful to consider the ruling in *Northwest Ecosystem Alliance v. Fish and Wildlife Service*, 475 F.3d 1136 (9th Cir. 2007). There, the issue was the listing as a DPS of that portion of the gray squirrel population found in Washington State. The court upheld a FWS finding of no marked genetic separation of the Washington gray squirrels. *Id.* at 1149-50. The basis for that finding by the court undermines the premises of the 1997 Final Rule because there was a stronger evidentiary basis for designating the gray squirrel as a DPS than exists, or existed, for the SSL DPS designation. Four facts stand out: (1) the Columbia River constituted a clear, unambiguous geographical barrier to gray squirrel and gene flow while no such barrier exists for SSLs; (2) there was evidence of reduced genetic diversity in the Washington gray squirrel population that is not found for SSLs (Hoffman et al 2009); (3) there were no shared mtDNA haplotypes from the control region in the mtDNA in western gray squirrels across the Columbia River barrier which stands in contrast to SSLs where a large number of haplotypes are shared and where there is clear evidence from mtDNA that emigration occurs; and (4) there was evidence of reduced suitability of squirrel habitat north of the Columbia River that could have threatened that population whereas there is no such evidence regarding SSLs.

It also appears that in the case of the western gray squirrel FWS placed a lower weighting on the genetic evidence than is the case for the SSL. It suggested, for example, that the small populations in that case meant there were likely to be confounding effects brought about by inbreeding and random genetic drift. While these specific issues are unlikely to be the case for SSLs, there are other issues to be considered when weighing the relevance of the genetic data, namely the fact that (1) the genetic data mainly reflects a historical picture of the population that may not be relevant in present circumstances, (2) the genetic data are not a random sample of the population which is a problem given the known meta-population features of SSLs and the likelihood that immigrants will not be evenly distributed through the breeding population, and (3) there is uncertainty about whether the current population genetics are simply driven by a historical geographical divide resulting from glaciation that has now been absent for several thousand years. The contemporary population appears to be composed of parapartic (neighboring) subpopulations in which genetic differentiation is the result of the combined effects of distance (O'Corry-Crowe et al 2006; Hoffman et al 2006) and the tendency for individuals to be substantially, but not entirely, philopatric (return to breed where they were born themselves). In other words, there are geographically defined subpopulations distributed along the coast from the western Aleutians to California which mix to some extent where they abut and the extent of this mixing is explained by geographical distance.

3. Natal Site Fidelity

The 1997 Final Rule argues that breeding female SSLs exhibit pupping site fidelity, typically returning to the same rookeries. 62 Fed. Reg. at 24349. The 1997 Final Rule suggests this site fidelity justifies a discreteness determination. *Id.*

The claim of natal site fidelity and "reproductive isolation" fails to account for the fact that post-1997 studies show SSLs are regularly moving back and forth between the eastern and western DPS zones and that females from the western zone are colonizing areas in the eastern zone. This movement between zones and the corresponding existence of male mediated gene flow is fatal to any natal site fidelity and "reproductive isolation" argument. Further, as discussed above, there

is concurrence in the scientific literature that if between one and ten animals from a population migrate to a part of the population in another geographic area and breed there once in a generation, it is sufficient to keep the overall population from genetically differentiating and from being isolated. As discussed above, that is the case here.

A further issue concerning natal site fidelity is that fidelity to a pupping site does not define whether females also mate at this site. In other seal species which are more amenable to study than SSLs, it has been possible to show that females often mate with males that are not present on the breeding colony (Willmer et al 1999[18]; Hoffman et al 2003[19]). Consequently, the level of fidelity to pupping sites in females is not a good indicator of a restriction of gene flow because of mating with males away from the rookeries.

Stepping back from the evidence for a moment, it is also important to recognize that the 1997 Final Rule mixed different concepts. First, as discussed in the preceding two paragraphs, natal site fidelity is not the same thing as genetic isolation. Second, natal site fidelity and accompanying assertions of reproductive isolation are used in science to denote the isolation that accompanies species formation where two species cannot interbreed and produce fertile and viable offspring. Where gene flow (*i.e.*, interbreeding among areas) is common across geographical groups of the same species, as is the case for SSLs in the eastern and western zones, the concept of "reproductive isolation" as that term is used by scientists in population genetics is not applicable.

Equally important, the claim of natal site fidelity has no legal meaning. Each birthing or breeding site for every species in the world is unique in that it exists in a different geographic locale. Using such a geographic standard, every site or area to which members of any species return to breed or give birth would become a "unique" site sufficient to "justify" a DPS designation. Such a legal "standard" is, in fact, no standard at all, and it assuredly conflicts with the DPS Policy that DPS designations should be used only "sparingly." Even if the words "natal site fidelity" or "reproductive isolation" had legal meaning in some context, they do not under the ESA in the instant case. The net effect of arguing that female SSLs are isolated because of "unique" breeding areas or because of natal homing is to classify an entire species based on the characteristics of only part of the proposed DPS, breeding adult females. To do so, violates the ESA.

The reality is that the recent common ancestry of SSLs, the acknowledged movement of animals between the DPS zones, the colonization of areas in one zone by animals from the other zone, the uncertainty surrounding the meaning of site fidelity and male mediated gene flow among SSLs all demonstrate that SSLs are not "reproductively isolated." While there may be limited female mediated gene flow, SSLs interbreed in evolutionary and ecological timescales and are not "reproductively isolated." Thus, evidence developed since 1997 shows that the reliance in

[18] Where have all the fathers gone? An extensive microsatellite analysis of paternity in the grey seal (*Halichoerus grypus*). Author(s): Wilmer, J.W., Allen, P.J., Pomeroy, P.P., et al. Source: MOLECULAR ECOLOGY, Volume: 8, Pages: 1417-1429, 1999.

[19] Male reproductive strategy and the importance of maternal status in the antarctic fur seal Arctocephalus gazella. Author(s): Hoffman, J.I., Boyd, I.L., Amos, W. Source: EVOLUTION, Volume: 57, Issue: 8, Pages: 1917-1930, 2003.

the 1997 Final Rule on natal site fidelity is an inappropriate and incorrect basis for the DPS designations.

C. Conclusion

As stated in Baker et al 2005: "The zones of contact between the Asian and western stocks and between the eastern and western stocks likely do not represent barriers to gene flow. Rather, they are the historical points of contact of three expanding populations that have adjusted their ranges in response to increased habitat availability since the last glaciation." The presence of the same haplotypes in each of the eastern and western SSL DPSs, the movement of male and female SSLs between the zones, the colonization of rookeries in the eastern DPS by western DPS animals, and the evidence of male mediated gene flow all support the fact that there are no barriers to gene flow and, in fact, that gene flow is occurring. The facts are that numerous studies and events since the 1997 Final Rule defeat the assertion that there is a marked genetic separation and a distinct genetic break between the eastern and western SSL DPSs.

IV. The Significance Standard For DPS Designations

Pursuant to the DPS Policy, after an affirmative discreteness finding is made, a population segment must then be determined to be significant to the species to which it belongs. 61 Fed. Reg. at 4725. The question of significance does not arise unless and until a discreteness finding is made. In the instant case, no valid discreteness finding has been made. Therefore, it is unnecessary to consider the significance issue. However, and only for the sake of argument, this Comment will review the significance criteria.

Pursuant to the DPS Policy, the consideration of significance may include, but is not limited to, the following four factors.

- Persistence of the discrete population segment in an ecological setting unusual or unique for the taxon.
- Evidence that loss of the discrete population segment would result in a significant gap in the range of a taxon.
- Evidence that the discrete population segment represents the only surviving natural occurrence of a taxon that may be more abundant elsewhere as an introduced population outside its historic range.
- Evidence that the discrete population segment differs markedly from other populations of the species in genetic characteristics.

Id.

As with the determination of discreteness, the terms "markedly" and "significant" are to be given their "commonly understood" sense. *Id.* at 4723. "Markedly," as discussed above, means "appreciably." Webster's New World Dictionary defines "significant" as important or momentous. *See also, Northwest Ecosystem Alliance v. Fish and Wildlife Service,* 475 F.3d

1136, 1146 (9th Cir. 2007), ("[T]he term 'significant' has 'its commonly understood meaning,' which is 'important.'"). Further, as with a discreteness finding, the evidentiary standard is that a significance determination is to be made only when the preponderance of biological evidence allows a conclusive finding. Finally, the requirement that the best scientific and commercial data available be used in making a significance finding applies with equal force. None of these standards are met for the existing DPS designation.

The 1997 Final Rule made no claim the DPSs exist in a unique or unusual ecological setting or that they represent the only surviving occurrence of a taxon. The genetics factor is easily disposed of. The existence of genetic differences alone is insufficient to support a significance finding and, for reasons articulated above, claims of a marked genetic difference fail.

Regarding the significant gap factor, the 1997 Final Rule states, without analysis or explanation, that each SSL population segment is important and its extinction would represent a "substantial loss" in ecological and genetic diversity. 62 Fed. Reg. at 24350. Such a statement represents a self-fulfilling and, therefore, inappropriate legal standard. The net effect of such a standard is that every population grouping is significant and, therefore, everything is significant. A standard under which everything qualifies is, in fact, no standard. The DPS Policy purports to establish a significance standard but the 1997 Final Rule ignores it by finding that everything is significant.

Further, the basis for the 1997 Final Rule was that there is a "distinct break" in genetic distribution between the eastern and western SSL DPSs. If that were the case, then NMFS' significant gap argument makes no sense. If there is no genetic mixing, no interbreeding, and each population segment is completely separate then it would not matter to the taxon if one segment disappeared because there is no relationship between the two. However, post-1997 studies show significant interbreeding and genetic mixing. These studies show SSL movement between the DPS zones and colonization of one DPS area by SSLs from the other area. Not only does this colonization show a lack of discreteness but it also undermines the significant gap theory.

V. The Listing Factors for DPS Designations

If a population segment meets the separate tests of being discrete and significant, it must then satisfy the ESA standards for listing as a threatened or endangered species. 61 Fed Reg. at 4725. However, pursuant to the DPS Policy, the listing factors are considered only if the proposed DPS is found to be both discrete and significant. *Id.* Here, neither the discreteness nor the significance standards are met. Therefore, this Comment will not evaluate the listing factors except to note that serious questions have been raised about the status of the existing SSL DPSs.

VI. Conclusion

The ESA defines a DPS as a vertebrate species of fish or wildlife "which interbreeds when mature." 16 U.S.C. §1532(16). Thus, evidence of interbreeding is a lynchpin of a DPS designation and population groups that interbreed should be considered as one unit. Given that, it is incorrect to persist in the present DPS designations in the face of clear evidence developed since 1997 of (1) interbreeding between the eastern and western SSL DPSs as animals from one DPS zone mix and breed with animals from the other DPS zone, (2) male mediated gene flow,

and (3) no barriers to genetic exchange between the eastern and western DPS zones. Further, the genetic evidence relied on in the 1997 Final Rule for the SSL DPS designations fails to meet the required legal and evidentiary standards necessary to establish a marked genetic separation. Given events and studies that have occurred since 1997, some of which are discussed above, the necessary result of the current stock assessment must be a finding that the existing SSL DPS designations fail to meet the statutory standards in the ESA and fail to meet the discrete and significant thresholds in the DPS Policy.

Sincerely,

David Benton
Executive Director

cc: Governor Sean Parnell, State of Alaska
Governor Christine Gregoire, State of Washington
Governor Ted Kulongoski, State of Oregon
Senator Lisa Murkowski
Senator Mark Begich
Senator Patty Murray
Senator Maria Cantwell
Congressman Don Young
Honorable Gary Locke, Secretary of Commerce
Dr. Jane Lubchenco, Undersecretary of Commerce for Oceans and Atmosphere
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