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cc Mary Richardson/R2/FWS/DOI@FWS
bcc
Subject bald eagle petition

ok, this is NOT our petition form for bald eagle, but we're having some trouble figuring out the proper
format
are we on the right path?



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Thanks
Debra

August XX, 2005

Summary Outline of Petition to Designate as a Distinct Population Segment the Southwestern Population of Bald Eagle (*Haliaeetus leucocephalus*); submitted by Robin Silver, Center for Biological Diversity on October 6, 2004.

Analysis for Distinct Population Segment			
Petition claims for current status and threat Factor A. The present or threatened destruction, modification, or curtailment of its habitat or range.	Petition Information Source	Information in Service Files	Service conclusion regarding petition claim
<i>Discreteness of the population segment in relation to the remainder of the species to which it belongs.</i>			
<i>The population segment is markedly separated from other populations of the same taxon as a consequence of physical, physiological, ecological, or behavioral factors</i>	Ecological Factor - The desert nesting bald eagle persists in the unique ecological setting. The Desert Nesting Bald Eagle population breeds predominantly in upper and lower Sonoran life zone habitat. ¹	No information in files refutes (need supporting citations?).	Information appears to be substantial.
	Ecological Factor - With the	Historically, breeding areas	Some exceptions to the

¹ AGFD 1994b, 1999a, 2000; Beatty 1993; Beatty and Driscoll 1994, 1996a, 1996b; Beatty *et al.* 1995a, 1995b, 1998; Driscoll and Beatty 1994; Driscoll *et al.* 1992; Gerrard and Bortoletti 1988; Hunt *et al.* 1992; Ohmart and Sell 1980; Stalmaster 1987; SWCBD 1999; USFWS 1982, 1997a, 1997b, 1998, 2000a., 2002a, 2003b.

	exception of a single 8,000 foot elevation nest (Luna BA), all known Arizona BAs are located in the Sonoran Desert in the central part of the State in Upper and Lower Sonoran Desert habitats from elevations of 330 meters (1,080 feet) to 1,720 meters (5,640 feet). ²	with documented breeding included the Stoneman breeding area, which was above 5,640 feet at 6,800 feet (Hunt <i>et al.</i> 1992). Currently, the Crescent, Becker, and Lake Mary BAs are above 5,640 feet. In 2005, 1+ young were produced, but ultimately failed at Crescent; the Becker BA went unoccupied; and one young was successfully hatched (fledging had not yet taken place at the time of this writing) at the Lake Mary BA.	Sonoran Desert restriction exist. Information in dispute.
	Behavioral Factor - Southwestern desert nesting bald eagles breed earlier, nest earlier, and fledge their young sooner than bald eagles elsewhere. Nest initiation occurs from November to February, Eggs are laid and incubated from December to March, Eggs hatch between	Stalmaster (1987) notes that bald eagles in Florida begin nest initiation in October, even earlier than Arizona bald eagles.	Some dispute over early nesting of Southwestern desert bald eagles as an exception.

² Beatty 1993; Beatty and Driscoll 1994, 1996a; Beatty *et al.* 1995a, 1995b, 1998; Driscoll and Beatty 1994; Driscoll *et al.* 1992.

	February and April. Nestlings fledge in May or June. ³		
	Behavioral Factor - Unlike bald eagles elsewhere in North America, Southwestern Desert nesting bald eagles utilize cliff nest sites. Only in the Aleutian Islands is this unique use of cliff nest sites known. ⁴	The majority of the information in the files does not refute. However, Gerrard and Bortolotti indicate that bald eagles in other areas may use cliff <i>if</i> suitable trees are not available. Stalmaster (1987) noted exceptions to tree nests as well, but indicated that, while eagles in other areas may rarely use cliffs or other surfaces, this is an exception, whereas in Arizona, cliff nesting is common. In addition, bald eagles are known to nest on cliffs on the Channel Islands off California (L. F. Kiff in NOAA 2005).	Information in dispute.
	“...one study found that cliff nests were selected 73 percent of the time, while tree nests	No information in files refutes.	Information appears to be substantial.

³ AGFD 1999a, 2000; Beatty 1993; Beatty and Driscoll 1994, 1996a; Beatty *et al.* 1995a, 1995b, 1998; Driscoll and Beatty 1994; Driscoll *et al.* 1992; Gerrard and Bortolotti 1988; Hunt *et al.* 1992; Stalmaster 1987; USFWS 1997a, 1997b, 1998, 2002a, 2003b.

⁴ Hunt *et al.* 1992.

	were selected 27 percent of the time.” ⁵		
<i>Quantitative measures of genetic or morphological discontinuity may provide evidence of this separation.</i>	Morphological Factor - Desert nesting bald eagles are smaller than others - quantitative measures of the physical differences between Southwestern Desert Nesting Bald Eagles and Bald Eagle elsewhere offer evidence of morphological discontinuity. ⁶	Stalmaster (1987) notes that southern eagles are much smaller and lighter than their northern counterparts.	Some dispute in information.
	99.997% of individuals objectively identified while participating in breeding activity in this population came from within the Desert Nesting population. ⁷	No information in files refutes.	Information appears to be substantial.
	Since 1977, biologists in Arizona have banded 256 nestlings. One individual has been objectively identified as having emigrated. In other words, 99.6% of individuals born here remain here. Such percentages evidence reproductive isolation. ⁸	No information in files refutes.	Information appears to be substantial.

⁵ Hunt *et al.* 1992.

⁶ AGFD 1999a, 2000; Hunt *et al.* 1992; USFWS 1997a, 1997b, 1998, 2002a, 2003b.

⁷ AGFD 1994b, 1999a, 2000; Beatty and Driscoll 1996b; Hunt *et al.* 1992; SWCBD 1999; USFWS 1997a, 1997b, 1998, 2002a, 2003b.

⁸ Personal communication, AGFD, USFWS.

	<p>Band returns in the breeding population have supported the theory that Bald Eagles hatched in Arizona breed here. From 1991 to 1998, 74.5 percent (353/474) of all breeding adults were identified. In 1991, 21 percent of all identified adults originated from Arizona, while the rest were unknown. In 1998, the percentage of known Arizona origin breeders had more than doubled (53.3%). During this study, only one individual was found breeding in Arizona having originated from elsewhere (Texas), and only one individual was found to have emigrated from Arizona (to California).⁹</p>	No information in files refutes.	Information appears to be substantial.
	<p>Arizona's breeding population is not supported or maintained by immigration from other states or regions.¹⁰ Results from banding 256 nestlings over 20 years and identifying</p>	No information in files refutes.	Information appears to be substantial.

⁹ Ibid. (See Footnote 5).

¹⁰ AGFD 1999a, 2000.

	372 breeding adults over 8 years determined that only one individual from out-of-state entered the breeding population, and only one left. ¹¹		
	The rare entry (0.003%) into the population of an individual from outside of the breeding population of the Desert Nesting population has yet to contribute to the gene pool. No fledgling from the Luna Nest has entered into breeding activities within the region. ¹²	No information in files refutes.	Information appears to be substantial. The “rare entry” refers to the bald eagle from Texas that currently occupies the Luna BA. This BA is not part of the Desert Nesting population.
	Should a population crash occur in Arizona, the pool of eagles to repopulate the Southwest could be left to the few pairs in the neighboring states or Mexico. ¹³	No information in files refutes.	Information appears to be substantial.
	“...there is no documentation of eagles from these neighboring Southwestern states breeding in Arizona or <i>vice versa</i> (AGFD 1994)”. ¹⁴	It is true that no California, Nevada, Utah, or New Mexico eagles have been identified here, however, it should be noted that limited banding has occurred.	Information appears to be substantial.

¹¹ Ibid. (See footnote 7).

¹² AGFD 1994b.

¹³ Ibid. (See footnote 5).

¹⁴ AGFD 1994b.

	In 2004, this conclusion has not changed. There is still no evidence that fledglings from the Luna breeding area have participated in breeding activity elsewhere within the region. ¹⁵	No information in files refutes.	Information appears to be substantial.
	Rare entry into other regional bald eagle populations is the norm. Survey responses indicated that only two nestlings out of thousands banded were found to have bred in other areas (one from Greater Yellowstone Ecosystem, the other from South Carolina). The tendency for banded nestlings to breed within their natal populations is well known. ¹⁶	No information in files refutes.	Information appears to be substantial.
	The current understanding of genetics does not refute the discrete and isolated nature of the Desert Nesting bald eagle. Review of all information regarding genetic analysis of the Southwestern Desert	Hunt <i>et al.</i> (1992) contains the genetic work completed to date on the southwestern bald eagle population. This work is cited within the Final Rule for reclassification of the bald eagle from	Information appears to be substantial.

¹⁵ Pers. Comm. AGFD, USFWS.

¹⁶ Hunt *et al.* 1992.

	<p>Nesting Bald Eagle reveals consistent uncertainty.¹⁷</p>	<p>endangered to threatened. The Final Rule notes that: 1) the studies did not resolve any specific genetic markers from which Arizona eagles could be differentiated from other populations; 2) genetic heterozygosity is high, and; 3) no quality of uniqueness among the Arizona eagles implied the existence of adaptations to the desert environment. These conclusions are generally supported by Hunt <i>et al.</i> (1992). However, Hunt <i>et al.</i> (1992) offer several cautions that are not considered in the Final rule, and that are more consistent with the position taken in the petition that the genetic work “reveals consistent uncertainty.” Specifically, authors Vyse and Zegers and Hostert, as quoted in Hunt <i>et al.</i> (1992), repeatedly indicate that their data are inconclusive, as evidenced by such</p>	
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¹⁷ CBD 2004e, Hunt *et al.* 1992, SWCBD 1999.

		<p>statements as "...at present, the results from the 33.6 probe should be taken with some caution"; and "These findings must be assumed to be preliminary (and treated with due caution), because of a lack of information concerning sampling procedures. The results we have obtained could easily be explained by sampling procedures;" and "At present these data (HinfI/M-13) are too incomplete to be considered further [from Vyse]." In addition, the studies note "Question 4...is difficult to answer with precision because of the different sample sizes between 1985 and 1990...this difference is possibly an artifact of the many fewer samples in 1985;" and "...six loci may not be enough to give a reliable estimate of the true genetic distance;" and "We feel caution should be exercised when interpreting</p>	
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		these results due to the low numbers of individuals sampled from most states but especially because of the few loci examined [from Zegers and Hostert].”	
	Current genetic data support no definitive conclusions concerning isolation or lack of isolation. ¹⁸	See above comment.	Information appears to be substantial.
	“...no significant heterogeneity of allele frequency was detected between the Arizona group and the six other samples (Maryland, Florida, Washington, California, Texas, or Minnesota), or did we find alleles unique to any population. Nei’s analysis of genetic distance...vaguely suggested that eagles from Arizona were most similar to those from Maryland...We caution against interpreting these results as significant because of the few number of	See above comment.	Information appears to be substantial.

¹⁸ Ibid. (See footnote 17).

	polymorphic loci examined (Hunt <i>et al.</i> 1992).” ¹⁹		
	In the DNA fingerprinting study, similar inconclusive information resulted, and the primary DNA fingerprinting researcher was unable to identify constant population-specific DNA markers. However, using combinations of bands, he was able to assign most individual birds to their respective population. It was noted that the California population appeared more closely related to the Florida birds than to the Arizona eagles.	No information in files refutes.	Information appears to be substantial.
	Evolutionary changes involving eggshell morphology, embryonic metabolism, and the adaptations of nestling to heat stress and dehydration might involve a relatively small number of genes. It is very highly unlikely that such genes would be detectable in the broad studies of genetic	No information in files refutes.	Information appears to be substantial.

¹⁹ Hunt *et al.* 1992

	variation reported in sections E6...and E7.		
	In summary, genetic analyses are suggestive of differentiation, but generally inconclusive. FWS based its delisting decision, in good part, on an inappropriate claim that the Desert Nesting Bald Eagle population is not a “distinct population segment” citing as evidence two genetic studies in Hunt <i>et al.</i> 1992. However, one of these was statistically inadequate to detect differentiation and the second reported significant differentiation that was ignored by the FWS. ²⁰	See above comment.	Information appears to be substantial.
	One allozyme study used only five loci and low sample sizes and unsurprisingly, was unable to resolve Arizona from other populations (MD, FL, WA, CA, TX, MN). DNA fingerprinting analysis isolated population specific DNA markers, and suggested that CA and FL samples were	No information in files refutes.	Information appears to be substantial.

²⁰ CBD 2004e.

	closer to each other than to Arizona. ²¹		
	Quoting from the Service's DPS Policy, the Petition reiterates the Service's position that "Thus, evidence of genetic distinctness or of the presence of genetically determined traits may be important in recognizing some DPS's, but the draft policy was not intended to always specifically require this kind of evidence in order for a DPS to be recognized..."	No information in files refutes.	Information appears to be substantial.
	Quoting from the Service's DPS Policy, the Petition reiterates the Service's position that "The Services do not consider it appropriate to require absolute reproductive isolation as a prerequisite to recognizing a distinct population segment. This would be an impracticably stringent standard, and one that would not be satisfied even by some recognized species that are known to sustain a low	No information in files refutes.	Information appears to be substantial.

²¹ Hunt *et al.* 1992; CBD 2004e.

	frequency of interbreeding with related species...”		
	Quoting from the Service’s DPS Policy, the Petition reiterates the Service’s position as follows: “However, the standard adopted allows for some limited interchange among population segments considered to be discrete, so that loss of an interstitial population could well have consequences for gene flow and demographic stability of a species as a whole.”	No information in files refutes.	Information appears to be substantial.
<i>The significance of the population segment to the species to which it belongs.</i>			
<i>Persistence of the discrete population segment in an ecological setting unusual or unique for the taxon.</i>	The desert nesting bald eagle persists in the unique ecological setting of the Sonoran life zones of the desert Southwest. ²²	No information in files refutes.	Information appears to be substantial.
	With the exception of a single 8,000 foot elevation nest (Luna BA), all known Arizona BAs are located in the Sonoran Desert in the central part of the State in Upper and Lower	As noted previously, the historical BA at Stoneman Lake, as well as the current Crescent, Lake Mary, and Becker BAs are all above 5,640 feet in elevation.	Information appears to be substantial.

²² Ibid. (See footnote 1).

	Sonoran Desert habitats from elevations of 330 meters (1,080 feet) to 1,720 meters (5,640 feet). ²³		
<i>Evidence that loss of the discrete population segment would result in a significant gap in the range of a taxon.</i>	For more than 20 years, USFWS has recognized the fact that the Southwest represents a significant portion of the Bald Eagle range. It follows logically then that loss of the Desert Nesting population would result in a significant gap in the range of the Bald Eagle. ²⁴	No information in files refutes.	Information appears to be substantial.
	Hunt <i>et al.</i> (1992) says “...were the [Southwestern Desert Nesting Bald Eagle] population extirpated, there is no firm reason to believe that bald eagles released into Arizona from elsewhere would posses [sic] the adaptations required to increase their numbers.”	No information in files refutes.	Information appears to be substantial.
	AGFD (1994b) says “...Because Arizona continues to possess nearly the entire breeding population within the	No information in files refutes.	Information appears to be substantial.

²³ Ibid. (See footnote 2).

²⁴ AGFD 1994b, 1999a, 2000; Hunt *et al.* 1992; SWCBD 1999; USFWS 1982, 1994a, 1995, 2001a.

	Southwestern Region, concerns remain over retaining the genetic integrity of this population...Should a population crash occur in Arizona, the pool of eagles to repopulate the Southwest could be left to the few pairs in the neighboring states or Mexico. However, at this time, there is no documentation of eagles from these neighboring Southwestern states breeding in Arizona or <i>vice versa</i> .” ²⁵		
	Bald eagles in the southwestern United States have been considered as a distinct population for the purposes of consultation and recovery efforts under the Act.	Early biological opinions agreed with this statement from the petition, however, some biological opinions, dated after the Final Rule reclassifying bald eagles to threatened, note that the southwestern population of bald eagles used to be considered a DPS, but no longer is considered as such.	Information appears to be substantial.
	Quoting from the Service’s DPS Policy, the Petition reiterates the Service’s position that “The Services continue to	No information in files refutes.	Information appears to be substantial.

²⁵ AGFD 1994b.

	believe that occurrence in an unusual ecological setting is potentially an indication that a population segment represents a significant resource of the kind sought to be conserved by the Act...”		
<i>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.</i>	N/A		
<i>Evidence that the discrete population segment differs markedly from other populations of the species in its genetic characteristics.</i>	Current genetic data support no definitive conclusions concerning isolation or lack of isolation. The current understanding of genetics does not refute the discrete and isolated nature of the Desert Nesting Bald Eagle. ²⁶	No information in files refutes. See genetics discussion above.	Information appears to be substantial.
	“...no significant heterogeneity of allele frequency was detected between the Arizona group and the six other samples	No information in files refutes. See genetics discussion above.	Information appears to be substantial.

²⁶ Ibid. (See footnote 18).

	(Maryland, Florida, Washington, California, Texas, or Minnesota), or did we find alleles unique to any population. Nei's analysis of genetic distance...vaguely suggested that eagles from Arizona were most similar to those from Maryland...We caution against interpreting these results as significant because of the few number of polymorphic loci examined (Hunt <i>et al.</i> 1992).” ²⁷		
	In the DNA fingerprinting study, similar inconclusive information resulted, and the primary DNA fingerprinting researcher was unable to identify constant population-specific DNA markers. However, using combinations of bands, he was able to assign most individual birds to their respective population. It was noted that the California population appeared more closely related to the Florida birds than to the Arizona	No information in files refutes. See genetics discussion above.	Information appears to be substantial.

²⁷ Ibid. (See footnote 19).

	eagles.		
	Genetic analyses are suggestive of differentiation, but inconclusive. FWS based its delisting decision, in good part, on an inappropriate claim that the Desert Nesting Bald Eagle population is not a “distinct population segment” citing as evidence two genetic studies in Hunt <i>et al.</i> 1992. However, one of these was statistically inadequate to detect differentiation and the second reported significant differentiation that was ignored by the FWS. ²⁸	No information in files refutes. See genetics discussion above.	Information appears to be substantial.
<i>Miscellaneous Comments</i>	Quoting from the Service’s DPS Policy, the Petition reiterates the Service’s position that “...Restricting listings to full taxonomic species would render the Act’s definition of species, which explicitly includes subspecies and DPS’s of vertebrates, superfluous. Clearly the Act is intended to authorize listing of some entities that are not accorded	No information in files refutes.	Information appears to be substantial.

²⁸ Ibid. (See footnote 20).

	the taxonomic rank of species...”		
	The July 6, 1999 proposal to remove the Southwestern Desert Nesting Bald Eagle from the ESA List of Threatened and Endangered Species implies that accomplishment of Recovery Plan goals provides the primary basis for delisting. Much has been learned in the nearly twenty years since the production of the Southwest Region Bald Eagle Recovery Plan. The Recovery Plan has not been updated to include current knowledge.	No information in files refutes. [<i>NOTE: The Recovery Plan is actually 23 years old</i>].	Information appears to be substantial.
	Bald eagles in the southwestern United States have been considered as a distinct population segment for the purposes of consultation and recovery efforts under the Act.	No information in files refutes.	Information appears to be substantial.
	Quoting USFWS raptor biologist Robert Mesta: “Although this region (Southwest) has met its recovery goals, both the recovery team and the FWS	No information in files refutes.	Information appears to be substantial.

	have recommended against downlisting because of threats to habitat, small size of population, and adverse climatic conditions...”		

Literature Cited

Arizona Game and Fish Department (AGFD). 1994a. Inter-office Memo; from Susan Sferra, Nongame Birds Program manager; to Terry Johnson, Nongame Branch Chief; Subject: Bald eagle: threatened versus endangered; October 24, 1994.

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