ii. EPA recommends, but does not require, that water solubility be quantitatively estimated prior to initiating this study. One method, among many similar methods, for estimating water solubility is described in the article entitled "Improved Method for Estimating Water Solubility From Octanol/Water Partition Coefficient" by W.M. Meylan, P.H. Howard, and R.S. Boethling in *Environmental Toxicology and Chemistry*. 15(2):100–106. 1996. This reference is available under docket ID number EPA–HQ–OPPT–2007–0531 at the EPA Docket Center, Rm. 3334 in the EPA West Bldg. located at 1301 Constitution Ave., NW., Washington, DC, from 8:30 a.m. to 4:30 p.m., Monday through Friday, excluding legal holidays.

iii. Chemical substances that are dispersible in water may have log K_{ow} values greater than 4.2 and may still be acutely toxic to aquatic organisms. Test sponsors who wish to conduct Test Group 1 studies on such chemical substances may request a modification to the test standard as described in 40 CFR 790.55. Based upon the supporting rationale provided by the test sponsor, EPA may allow an alternative threshold or method be used for determining whether acute or chronic aquatic toxicity testing be performed for a specific substance.

iv. The OECD 425 Up/Down Procedure, revised by OECD test guidelines in December 2001, is available under docket ID number EPA–HQ–OPPT–2007–0531 at the EPA Docket Center, Rm. 3334 in the EPA West Bldg. located at 1301 Constitution Ave., NW., Washington, DC, from 8:30 a.m. to 4:30 p.m., Monday through Friday, excluding legal holidays.

v. The neutral red uptake basal cytotoxicity assay, which may be used to estimate the starting dose for the mammalian toxicity-acute endpoint, is available under docket ID number EPA–HQ–OPPT–2007–0531 at the EPA Docket Center, Rm. 3334 in the EPA West Bldg. located at 1301 Constitution Ave., NW., Washington, DC, from 8:30 a.m. to 4:30 p.m., Monday through Friday, excluding legal holidays.

(k) *Effective date.* This section is effective on [*30 days after date of publication of the final rule in the* **Federal Register**].

[FR Doc. 2010–3734 Filed 2–24–10; 8:45 am]

BILLING CODE 6560–50–S

DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

[Docket No. FWS–R2–ES–2008–0059; MO 92210–0–0008]

Endangered and Threatened Wildlife and Plants; 12-Month Finding on a Petition To List the Sonoran Desert Population of the Bald Eagle as a Threatened or Endangered Distinct Population Segment

AGENCY: Fish and Wildlife Service, Interior.

ACTION: 12-month petition finding.

SUMMARY: We, the U.S. Fish and Wildlife Service (Service), announce a 12-month finding on a petition to list the Sonoran Desert Area population of the bald eagle (*Haliaeetus leucocephalus*) as a distinct population segment (DPS). In the petition, we were asked that the DPS be recognized, listed as endangered, and that critical habitat be designated under the Endangered Species Act of 1973, as amended (Act). After review of all available scientific and commercial information, we find that the Sonoran Desert Area population of the bald eagle does not meet the definition of a DPS and, therefore, is not a listable entity under the Act. As a result, listing is not warranted, and we intend to publish a separate notice to remove this population from the List of Threatened and Endangered Wildlife once the District Court for the District of Arizona has been notified. We ask the public to continue to submit to us any new information that becomes available concerning the taxonomy, biology, ecology, and status of this population of the bald eagle and to support cooperative conservation of the bald eagle within the Sonoran Desert Area.

DATES: The finding announced in this document was made on February 25, 2010.

ADDRESSES: This finding is available on the Internet at *http://www.regulations.gov* at Docket Number [FWS–R2–ES–2008–0044]. Supporting documentation for this finding is available for inspection, by appointment, during normal business hours at the Arizona Ecological Services Office, 2321 West Royal Palm Road, Suite 103, Phoenix, AZ 85021–4951. Please submit any new information, materials, comments, or questions concerning this species or this finding to the above address, Attention: Sonoran Desert Area bald eagle.

FOR FURTHER INFORMATION CONTACT: Steve Spangle, Field Supervisor, Arizona Ecological Services Office (*see* **ADDRESSES**); telephone, 602–242–0210; facsimile, 602–242–2513. If you use a telecommunications device for the deaf (TDD), call the Federal Information Relay Service (FIRS) at 800–877–8339.

SUPPLEMENTARY INFORMATION:

Background

Section 4(b)(3)(B) of the Act (16 U.S.C. 1531 *et seq.*) requires that, for any petition to revise the Lists of Endangered and Threatened Wildlife and Plants that contains substantial scientific or commercial information that listing may be warranted, we make a finding within 12 months of the date of our receipt of the petition on whether the petitioned action is: (a) Not warranted, (b) warranted, or (c) warranted, but the immediate proposal of regulation implementing the petitioned action is precluded by other pending proposals to determine whether species are threatened or endangered, and expeditious progress is being made to add or remove qualified species from the List of Endangered and Threatened Wildlife and Plants. Section 4(b)(3)(C) of the Act requires that we treat a petition for which the requested action is found to be warranted but precluded as though resubmitted on the date of such finding, that is, requiring that we make a subsequent finding within 12 months. Such 12-month findings must be published in the **Federal Register**.

This notice constitutes our 12-month finding on a petition to list the Sonoran Desert Area bald eagle. In this document, the Sonoran Desert Area population is the name given to the entity under evaluation for designation as a DPS. For the purposes of this assessment, the Sonoran Desert Area population includes all bald eagle territories within Arizona, the Copper Basin breeding area in California near the Colorado River, and the territories of interior Sonora, Mexico, that occur within the Sonoran Desert or adjacent, transitional communities. For more detail on the boundary of the DPS, *see* the discussion below under *Determination of the Area for Analysis.*

Previous Federal Action

Bald eagles gained protection under the Bald Eagle Protection Act (16 U.S.C. 668–668d) in 1940 and the Migratory Bird Treaty Act (MBTA) (16 U.S.C. 703–712) in 1972. A 1962 amendment to the Bald Eagle Protection Act added protection for the golden eagle and the amended statute became known as the Bald and Golden Eagle Protection Act (BGEPA). On March 11, 1967 (32 FR 4001), the Secretary of the Interior listed bald eagles south of 40 north latitude as endangered under the Endangered Species Preservation Act of 1966 (Pub. L. 89–699, 80 Stat. 926) due to a population decline caused by dichlorodiphenyltrichloroethane (DDT) and other factors. On February 14, 1978, the Service listed the bald eagle as an endangered species under the Act (16 U.S.C. 1531 *et seq.*) in 43 of the contiguous States, and as a threatened species in the States of Michigan, Minnesota, Wisconsin, Oregon, and Washington (43 FR 6230). Sub-specific designations for northern and southern eagles were removed.

On February 7, 1990, we published an advance notice of proposed rulemaking (55 FR 4209) to reclassify the bald eagle from endangered to threatened in the 43 States where it had been listed as endangered and retain the threatened status for the other five States. On July 12, 1994, we published a proposed rule to accomplish this reclassification (59 FR 35584), and the final rule was published on July 12, 1995 (60 FR 36000).

On July 6, 1999, we published a proposed rule to delist the bald eagle throughout the lower 48 States due to recovery (64 FR 36454). On February 16, 2006, we reopened the public comment period to consider new information received on our July 6, 1999 (71 FR 8238), proposed rule to delist the bald eagle in the lower 48 States. The reopening notice contained updated information on several State survey efforts and population numbers. Simultaneously with the reopening of the public comment period on the proposed delisting, we also published two **Federal Register** documents soliciting public comments on two new items intended to clarify the BGEPA protections for the bald eagle after delisting: (1) A proposed rule for a regulatory definition of "disturb" (71 FR 8265), and (2) a notice of availability for draft National Bald Eagle Management Guidelines (71 FR 8309). On May 16, 2006, we published three separate notices in the **Federal Register** that extended the public comment period on the proposed delisting (71 FR 28293), the proposed regulatory definition of "disturb" (71 FR 28294), and the draft guidelines (71 FR 28369). The comment period for all three documents was extended to June 19, 2006.

Between publication of the July 6, 1999, proposed rule to delist the bald eagle and the February 16, 2006, reopening of the comment period on the proposed rule to delist the bald eagle, we received a petition regarding bald eagles in the southwestern United States. On October 6, 2004, we received a petition from the Center for Biological Diversity (CBD), the Maricopa Audubon Society, and the Arizona Audubon Council requesting that the "Southwestern desert nesting bald eagle population" be classified as a DPS, that this DPS be reclassified from a threatened species to an endangered species, and that we concurrently designate critical habitat for the DPS under the Act.

On March 27, 2006, the CBD and the Maricopa Audubon Society filed a lawsuit against the U.S. Department of the Interior and the Service for failing to make a timely finding on the petition. The parties reached a settlement, and the Service agreed to complete its petition finding by August 2006. We announced in our 90-day finding on August 30, 2006 (71 FR 51549), that the petition did not present substantial scientific or commercial information indicating that the petitioned action may be warranted.

On January 5, 2007, the CBD and the Maricopa Audubon Society filed a lawsuit challenging the Service's 90-day finding that the "Sonoran Desert population" of the bald eagle did not qualify as a DPS, and further challenging the Service's 90-day finding that the population should not be uplisted to endangered status.

On July 9, 2007 (72 FR 37346), we published the final delisting rule for bald eagles in the lower 48 States. This final delisting rule also constituted the Service's final determination on the status of the Sonoran Desert population of bald eagles. In that final delisting rule, we stated that our findings on the status of the Sonoran Desert population of bald eagles superseded our 90-day petition finding because the final delisting rule constituted a final decision on the DPS determination. This determination was based on a thorough review of the best available data, which indicated that the threats to the species had been eliminated or reduced to the point that the species had recovered and no longer met the definition of a threatened or endangered species under the Act. It addressed the same issues that the Service would have considered as part of a 12-month finding had the Service made a positive 90-day finding on the petition and then subsequently conducted the required status review. We determined that the final delisting rule therefore rendered moot any issues regarding the 90-day petition finding.

On August 17, 2007, the CBD and the Maricopa Audubon Society filed a Motion for Summary Judgment, requesting the court to make a decision on their January 5, 2007, lawsuit. In early 2008, several Native American Tribes submitted *amicus curiae* ("friend of the court") briefs in support of the August 17, 2007, Motion for Summary Judgment. The San Carlos Apache Tribe, Yavapai-Apache Nation, and Tonto Apache Tribe submitted an *amicus curiae* brief to the court on January 29, 2008; the Salt River Pima-Maricopa Indian Community submitted an *amicus curiae* brief to the court on February 4, 2008; and the Fort McDowell Yavapai Nation submitted an *amicus curiae* brief to the court on February 7, 2008.

On March 5, 2008, the U.S. District Court for the District of Arizona made a final decision in the case and ruled in favor of the CBD and the Maricopa Audubon Society. The court order (*Center for Biological Diversity* v. *Kempthorne,* CV 07–0038–PHX–MHM (D. Ariz)), was filed on March 6, 2008.

The court:

(1) Ordered the Service to conduct a status review of the Desert bald eagle population pursuant to the Act to determine whether listing that population as a DPS is warranted, and if so, whether listing that DPS as threatened or endangered pursuant to the Act is warranted;

(2) Ordered the Service to issue a 12-month finding on whether listing the Desert bald eagle population as a DPS is warranted, and if so, whether listing that DPS as threatened or endangered is warranted;

(3) Ordered the Service to issue the 12-month finding within 9 months of the court order pursuant to 16 U.S.C. 1533(b)(3)(B), which translates to on or before December 5, 2008;

(4) Enjoined the Service's application of the July 9, 2007 (72 FR 37346), final delisting rule to the Sonoran Desert population of bald eagles pending the outcome of our status review and 12-month petition finding.

On May 1, 2008, we published a final rule designating bald eagles within the Southwest as a DPS for purposes of conforming to the court-ordered requirement to retain listing status as threatened for those bald eagles in the petitioned area (73 FR 23966). A map of the DPS for that action was included in the rule.

On May 20, 2008, we published a **Federal Register** notice (73 FR 29096) initiating a status review for the bald eagle in the Sonoran Desert Area of central Arizona and Northwestern Mexico. The information collection period remained open until July 7, 2008. Additional comments were received and considered beyond this date as discussed below.

On August 27, 2008, the CBD and Maricopa Audubon Society filed an unopposed motion (CV07–0038–PHX–MHM) to amend the March 6, 2008, court order by extending the completion date of the status review of the Desert bald eagle population until October 12, 2009. Supporting declarations were filed by the Salt River Pima-Maricopa Indian Community, the Inter Tribal Council of Arizona, and Joe P. Sparks. The motion was granted on August 29, 2008.

On September 14, 2009, the Service filed an unopposed motion to amend the March 6, 2008, court order by extending the completion date of the status review of the Sonoran Desert bald eagle population until February 12,

2010 (CV07–0038–PHX–MHM). The motion was granted on September 25, 2009, and a second extension was put in place.

On February 11, 2010, the Service filed, and was granted, an unopposed motion for a one week extension, extending the completion date to February 19, 2010.

Public Information

As noted above, on May 20, 2008, the Service published a notice to initiate a 12-month status review for the Sonoran Desert population of bald eagle in central Arizona and northwestern Mexico, and a solicitation for new information. To allow adequate time to consider the information, we requested that information be submitted on or before July 7, 2008. On January 15, 2009, a second **Federal Register** notice (74 FR 2465) was published announcing the continuation of information collection for the 12-month status review. In order to allow us adequate time to consider and incorporate submitted information, we requested that we receive information on or before July 10, 2009. Between May 2008 and the time that we published this document, 31 responses were submitted to *http://www.regulations.gov* and 5 letters were received by U.S. mail.

Tribal Information

In accordance with Secretarial Order 3206, the Service acknowledges our responsibility to consult with Federally recognized Tribes on a government-to-government basis. Over the course of the bald eagle status review, we have corresponded and met with various Tribes in Arizona, all of whom support protection of the bald eagle under the Act. On July 2, 2008, the Service and Tribal representatives from four Western Apache Tribes and one Nation (White Mountain Apache, San Carlos Apache, Tonto Apache Tribes, and Yavapai-Apache Nation) met to hear testimony from cultural authorities on a variety of subjects including the history of the eagle in Arizona, and the importance of the eagle to the Apache people. At the request of Tribal representatives, this meeting was recorded and incorporated into the administrative record for the 12-month finding. On July 3, 2008, the Service met with members of the Salt River Pima-Maricopa Indian Community, Gila River Indian Community, Tohono O'Odham Nation, Ak-Chin Indian Community, Tonto Apache Tribe, Fort McDowell Yavapai Nation, the Hopi Tribe, Pascua Yaqui Tribe, Zuni Tribe, and the InterTribal Council of Arizona. This meeting was held in Phoenix, Arizona, and a court reporter was present recording the meeting minutes. Members of the Tribes and nations present, however, did not consider this meeting government-to-government consultation pursuant to Secretarial Order 3206. On July 20, 2009, an official consultation meeting between the Service and Salt River Pima-Maricopa Indian Community occurred. Written comments were provided by the Western Apache Tribes and Nation and the Salt River Pima-Maricopa Indian Community on July 10, 2009.

Although comments from the Native American communities were provided in writing, much of the knowledge about the bald eagle was offered during the above-referenced face-to-face meetings. Native American knowledge about the eagle is passed down orally from one generation to the next, which is often referred to in the literature as traditional ecological knowledge. Traditional ecological knowledge refers to the knowledge base acquired by indigenous and local peoples over many hundreds of years through direct contact with the environment. Traditional knowledge is based in the ways of life, belief systems, perceptions, cognitive processes, and other means of organizing and transmitting information in a particular culture. Traditional ecological knowledge includes an intimate and detailed knowledge of plants, animals, and natural phenomena; the development and use of appropriate technologies for hunting, fishing, trapping, agriculture, and forestry; and a holistic knowledge, or "world view," which parallels the scientific discipline of ecology (Inglis 1993, p. vi).

Testimony by the Western Apache Tribes and Nation and Salt River Pima-Maricopa Indian Community clearly demonstrates the importance of the bald eagle to their culture, its relevance to their well-being, and their respect for its power. Their testimony also demonstrates the Western Apache and Salt-River Pima Maricopa knowledge base of the bald eagle and its habitat. The Native American relationship with the bald eagle in the Sonoran Desert Area predates modern Western scientific knowledge of the bald eagle by thousands of years (Lupe *et al.* pers. comm. 2008, p. 1). Given the expertise and traditional ecological knowledge about the bald eagle in the Southwest by the Western Apache Tribes and Nation and Salt-River Pima Maricopa Indian Community, we have attempted to incorporate their indigenous knowledge and information into our status review and 12-month finding.

Species Information

The bald eagle (*Haliaeetus leucocephalus*) is the only species of sea eagle regularly occurring in North America (60 FR 35999; July 12, 1995). Literally translated, *H. leucocephalus* means white-headed sea eagle. Bald eagles are birds of prey of the Order Falconiformes and Family Accipitridae. They vary in length from 28 to 38 inches (in) (71 to 96 centimeters (cm)), weigh between 6.6 and 13.9 pounds (lbs) (3.0 and 6.3 kilograms (kg)), and have a 66- to 96-in (168- to 244-cm) wingspan. Distinguishing features of adult bald eagles include a white head, tail, and upper- and lowertail-coverts; a dark brown body and wings; and a yellow iris, beak, leg, and foot. Immature bald eagles are mostly dark brown and lack a white head and tail until they reach approximately 5 years of age (Buehler 2000, p. 2).

Biology and Distribution

Though once considered endangered, the bald eagle population in the lower 48 States has increased considerably in recent years. Regional bald eagle populations in the Northwest, Great Lakes, Chesapeake Bay, and Florida have increased five-fold in the past 20 years. Bald eagles are now repopulating areas throughout much of the species' historical range that were unoccupied only a few years ago.

The bald eagle ranges throughout much of North America, nesting on both coasts from Florida to Baja California, Mexico in the south, and from Labrador to the western Aleutian Islands, Alaska, in the north. Fossil records indicate that bald eagles inhabited North America approximately 1 million years ago, but they may have been present before that (Stahlmaster 1987, p. 5). An estimated quarter to a half million bald eagles lived on the North American continent before the first Europeans arrived.

In many Western Apache groups, the bald eagle is called *Istlgáí,* which translates to "the white eagle" and is distinguished from the golden eagle, which is called *Itsa Cho* or "the big eagle." The bald eagle was first described in Western culture in 1766 as *Falco leucocephalus* by Linnaeus. This South Carolina specimen was later renamed as the southern bald eagle, subspecies *Haliaeetus leucocephalus leucocephalus* (Linnaeus) when Townsend identified the northern bald eagle as *Haliaeetus leucocephalus alascanus* in 1897 (Buehler 2000, p. 4). By the time the bald eagle was listed throughout the lower 48 States under the Endangered Species Act in 1978, ornithologists no longer recognized the

subspecies (American Ornithologists Union 1983, p. 106).

The bald eagle is a bird of aquatic ecosystems. It frequents estuaries, large lakes, reservoirs, major rivers, and some seacoast habitats. Fish is the major component of its diet, but waterfowl, gulls, and carrion are also eaten. The species may also use prairies if adequate food is available. Bald eagles usually nest in trees near water, but are known to nest on cliffs and (rarely) on the ground. The trees must be sturdy and open to support a nest that is often 5 feet (ft) (1.52 meters (m)) wide and 3 ft (0.91 m) deep. Adults tend to use the same breeding areas year after year, and often the same nest, though a breeding area may include one or more alternate nests. Nest shape and size vary, but typical nests are approximately 4.9 to 5.9 ft (1.5 to 1.8 m) in diameter and 2.3 to 4.3 ft (0.7 to 1.2 m) tall (Stahlmaster 1987, p. 53). In winter, bald eagles often congregate at specific wintering sites that are generally close to open water and offer good perch trees and night roosts.

Bald eagles are long-lived. One of the longest-living bald eagles known in the wild was reported near Haines, Alaska, as 28 years old (Schempf 1997, p. 150). In 2009, a female eagle nesting at Alamo Lake in Arizona turned 30 years old (J. Driscoll, Arizona Game and Fish Department (AGFD), pers. comm. 2009). In captivity, bald eagles may live 40 or more years. It is presumed that once they mate, the bond is long-term. Variations in pair bonding are known to occur. If one mate dies or disappears, the other will accept a new partner.

Bald eagle pairs begin courtship about a month before egg-laying. In the south, courtship occurs as early as September, and in the north, as late as May. The nesting season lasts about 6 months. Incubation lasts approximately 35 days, and fledging takes place at 11 to 12 weeks of age. Parental care may extend 4 to 11 weeks after fledging (Hunt *et al.* 1992, p. C9; Wood *et al.* 1998, pp. 336–338). The fledgling bald eagle is generally dark brown except the underwing linings, which are primarily white. Between fledging and adulthood, the bald eagle's appearance changes with feather replacement each summer. Young, dark bald eagles may be confused with the golden eagle, *Aquila chrysaetos.* The bald eagle's distinctive white head and tail are not apparent until the bird fully matures, usually at 4 to 5 years of age.

The migration strategies for breeding, nonbreeding, and juvenile or subadult age classes of bald eagles will vary depending on geographic location. Young eagles may wander widely for years before returning to nest in natal areas. Northern bald eagles winter in areas such as the Upper Mississippi River, Great Lakes shorelines, and river mouths in the Great Lakes area. For midcontinent bald eagles, wintering grounds may be the southern States, and for southern bald eagles, whose nesting may begin in the winter months, the nonbreeding season foraging areas may be the Chesapeake Bay or Yellowstone National Park during the summer. Eagles seek wintering (nonnesting) areas offering an abundant and readily available food supply with suitable night roosts. Night roosts typically offer isolation and thermal protection from winds. Carrion and easily scavenged prey provide important sources of winter food in terrestrial habitats far from open water.

The first major decline in the bald eagle population probably began in the mid to late 1800s. Widespread shooting for feathers and trophies led to extirpation of eagles in some areas. Shooting also reduced part of the bald eagle's prey base. Big game animals like bison, which were seasonally important to eagles as carrion, were decimated. Hunters also reduced the numbers of waterfowl, shorebirds, and small mammals. Ranchers used carrion treated with strychnine, thallium sulfate, and other poisons as bait to kill livestock predators and ultimately killed many eagles as well. These were the major factors, in addition to loss of nesting habitat from forest clearing and development, which contributed to a reduction in bald eagle numbers through the 1940s. In 1940, Congress passed the Bald Eagle Protection Act (16 U.S.C. 668–668d). This law prohibits the take, possession, sale, purchase, barter, or offer to sell, purchase or barter, transport, export or import, of any bald eagle, alive or dead, including any part, nest, or egg, unless allowed by permit (16 U.S.C. 668(a)). "Take" includes pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb (16 U.S.C. 668c; 50 CFR 22.3). The Bald Eagle Protection Act and increased public awareness of the bald eagle's status resulted in partial recovery or at least a slower rate of decline of the species in most areas of the country.

In the late 1940s, the use of dichlorodiphenyltrichloroethane (DDT) and other organochlorine compounds became widespread. Initially, DDT was sprayed extensively along coastal and other wetland areas to control mosquitoes (Carson 1962, pp. 28–29, 45–55). Later farmers used it as a general crop insecticide. As DDT accumulated in individual bald eagles from ingesting prey containing DDT and its metabolites, reproductive success plummeted. In the late 1960s and early 1970s, it was determined that dichlorophenyl-dichloroethylene (DDE), the principal breakdown product of DDT, accumulated in the fatty tissues of adult female bald eagles. DDE impaired calcium release necessary for normal eggshell formation, resulting in thin shells and reproductive failure.

In response to this decline, the Secretary of the Interior, on March 11, 1967 (32 FR 4001), listed bald eagles south of the 40th parallel as endangered under the Endangered Species Preservation Act of 1966 (16 U.S.C. 668aa–668cc). Bald eagles north of this line were not included in that action primarily because the Alaskan and Canadian populations were not considered endangered in 1967. On December 31, 1972, the Environmental Protection Agency banned the use of DDT in the United States. The following year, Congress passed the Endangered Species Act of 1973 (16 U.S.C. 1531–1544).

Nationwide bald eagle surveys, conducted in 1973 and 1974 by the Service, other cooperating agencies, and conservation organizations, revealed that the eagle population throughout the lower 48 States was declining. We responded in 1978 by listing the bald eagle throughout the lower 48 States as endangered except in Michigan, Minnesota, Wisconsin, Washington, and Oregon, where it was designated as threatened (43 FR 6233, February 14, 1978).

To facilitate the recovery of the bald eagle and the ecosystems upon which it depends, we divided the lower 48 States into five recovery regions. Separate recovery teams composed of experts in each geographic area prepared recovery plans for their region. The teams established goals for recovery and identified tasks to achieve those goals. Coordination meetings were held regularly among the five teams to exchange data and other information. We used these five recovery plans to provide guidance to the Service, States, and other partners on methods to minimize and reduce the threats to the bald eagle and to provide measurable criteria that would be used to help determine when the threats to the bald eagle had been reduced so that the bald eagle could be removed from the Federal List of Endangered and Threatened Wildlife and Plants.

Recovery plans in general are not regulatory documents and are instead intended to provide a guide on how to achieve recovery. There are many paths to accomplishing recovery of a species.

The main goal is to remove the threats to a species, which may occur without meeting all recovery criteria contained in a recovery plan. For example, one or more criteria may have been exceeded while other criteria may not have been accomplished. In that instance, the Service may judge that, overall, the threats have been reduced sufficiently, and the species is robust enough, to reclassify the species from endangered to threatened or perhaps to delist the species. In other cases, recovery opportunities may be recognized that were not known at the time the recovery plan was finalized. Achievement of these opportunities may be counted as progress toward recovery in lieu of methods identified in the recovery plan. Likewise, we may learn information about the species that was not known at the time the recovery plan was finalized. The new information may change the extent that criteria need to be met for recognizing recovery of the species. Overall, recovery of species is a dynamic process requiring adaptive management, and judging the degree of recovery of a species is also an adaptive management process that may, or may not, fully follow the guidance provided in a recovery plan.

Recovery of the bald eagle has been a dynamic process. During the recovery implementation process the Service used new information as it became available, to help determine whether recovery was on track. For instance, after the bald eagle was downlisted in 1995, the Southeastern Recovery Plan did not have specific delisting goals, and the Service used the recovery team to help determine the appropriate goal. This new delisting goal, developed by a team of individuals with bald eagle expertise, was the best guidance available to the Service for use in determining whether threats had been removed and whether to move forward with delisting was appropriate.

Between 1990 and 2000, the bald eagle population had a national average productivity of at least one fledgling per nesting pair per year. As a result, the bald eagle's nesting population increased at a rate of about eight percent per year during this time period. Since 1963, when the Audubon Society estimated that there were 487 nesting pairs, bald eagle breeding in the lower 48 States has expanded to more than 9,789 nesting pairs (Service 1995, p. 36001; Service 1999, p. 36457). By 2007, the bald eagles bred in each of the lower 48 States, with the greatest number of breeding pairs occurring in Minnesota (1,313), Florida (1,133), Wisconsin (1,065), and Washington (848) (Service 2007, p. 37349).

Regional bald eagle populations in the Northwest, Great Lakes, Chesapeake Bay, and Florida have increased five-fold from the late 1970s to the late 1990s. Bald eagles are now repopulating areas throughout much of the species' historical range that were unoccupied only a few years ago (64 FR 36454; July 6, 1999). The nationwide recovery of the bald eagle is due in part to the reduction in levels of persistent organochlorine pesticides (such as DDT) and habitat protection and management actions.

Historical and Current Status of the Sonoran Desert Area Population

Below we discuss the status of eagles in the Sonoran Desert Area population and in the States surrounding the Sonoran Desert Area population because it provides a context for our evaluation of whether the Sonoran Desert Area is a distinct population segment of bald eagles. As described above, the Sonoran Desert Area refers to all Sonoran Desert bald eagle territories within Arizona, the Copper Basin breeding area along the Colorado River just into California, and the territories of interior Sonora, Mexico. Bald eagles in Baja California are not included in our definition of the Sonoran Desert Area population because (1) they are associated with a marine, rather than inland, environment (Figure 1), (2) there is no documentation of Baja bald eagles interchanging with those in the Sonoran Desert Area, and (3) currently extant nests in Baja are limited to the Magdalena Bay region along the coast of the Pacific Ocean (Arnaud *et al.* 2001, p. 136; and King 2006, p. 4), in a coastal, rather than inland, climate.

Arizona

Hunt *et al.* (1992, pp. A11–A12) summarized the earliest records from the literature for bald eagles in Arizona. Coues noted bald eagles in the vicinity of Fort Whipple (now Prescott) in 1866, and Henshaw reported bald eagles south of Fort Apache in 1875. Bent (1937, pp. 321–333) reported breeding eagles at Fort Whipple in 1866 and on the Salt River Bird Reservation (since inundated by Roosevelt Lake) in 1911. Breeding eagle information was also recorded in 1890 near Stoneman Lake by S.A. Mearns. Additionally, there are reports of bald eagles along rivers in the White Mountains from 1937, and reports of nesting bald eagles along the Salt and Verde Rivers as early as 1930. Hunt *et al.* (1992, pp. D41–D46, D291–D326, Figures D4.0–1, D5.0–1, F3, F4, and F5) determined from reports and personal communications dating back to 1866 that historically there were 28 known breeding areas, 22 known and probable nest sites, and at least 60 unverified reports of possible nests/nest sites and unverified reports of bald eagles located across the State of Arizona. Many of the 60 possible nests/nest sites reported by Hunt *et al.* (1992) could be a collection of nests belonging to the same breeding territory. These reported locations ranged to the boundaries of the State from the Grand Canyon near Lake Powell, to the lower Colorado River where it separates Arizona and California, to the upper San Pedro River near the international border with Mexico, and east near the boundary with New Mexico (Hunt *et al.* 1992, Figures D4.0–1, D5.0–1, F3, F4, and F5).

More recent survey and monitoring efforts have increased our knowledge of bald eagle distribution in Arizona. The number of known breeding areas in Arizona in 1971 was 3; the number known in 2009 is 59. The number of bald eagle pairs occupying these sites increased from 3 in 1971 to 48 in 2009. The number of young hatched increased from a low of zero in 1972 to a high of 55 in 2006 (Driscoll *et al.* 2006, pp. 48–49; McCarty and Johnson 2009, p. 8, in draft). Productivity has also changed at the bald eagle breeding areas since the 1970s. Between 1975 and 1984, average annual productivity was 0.95 young per occupied breeding area. Between 1987 and 2005, average annual productivity was 0.78 young per occupied breeding area (derived from Table 7, pp. 48–50 in Driscoll *et al.* 2006). (These data take into account productivity for breeding areas throughout Arizona, and are not restricted to the Sonoran Desert population of bald eagles evaluated under the petition.)

Hunt *et al.* (1992, p. A155) conclude that it is likely that bald eagles nested on rivers throughout the Southwest in more pristine times, as reports on the nature of river systems and the assemblage of prey fishes both seem conducive to nesting success and suggest "richer and more extensive habitat in the lower desert" than would have been available on the Mogollon Plateau, where bald eagles are known to have occurred historically. Recent reoccupation of some of these historical breeding areas by bald eagles lends credibility to these reports. We evaluated a subset of the Allison *et al.* (2008, pp. 17–18) data to determine the status of 43 breeding areas within the Sonoran Desert Area of Arizona and concluded that 16 (37 percent) were pioneer breeding areas, or occupied for the first time. An additional 27 (63 percent) were either reoccupied, meaning they were known to have been occupied in the past, then vacated, and

subsequently reoccupied, or are considered to have been existing before their discovery (Allison *et al.* 2008, pp. 15–16).

The Salt River Pima-Maricopa Indian Community states that the O'odham have inhabited the Sonoran Desert and have known eagles since "time immemorial" (Anton and Garcia-Lewis 2009, p. 1). Although anthropologists debate what this means, at least one noted archaeologist has documented detailed evidence of cultural remains in the nearby Pinacate area that date back more than 40,000 years (Hayden and Dykinga 1988, p. XIV). A local, informal consensus of 10,000 years is less controversial (Toupal 2003, p. 11). Bald eagles have been documented historically within the culture of the Four Southern Tribes of Arizona, which includes the Salt River Pima-Maricopa Indian Community, Ak-Chin Indian Community, Gila River Indian Community, and Tohono O'odham Nation (Anton and Garcia-Lewis 2009, p. 2). Because eagles are considered to have equal or greater standing to humans, eagle burials were carried out identical to human burial practices (Anton and Garcia-Lewis 2009, p. 2), and bald eagle burials have been recovered from archaeological sites ancestral to the O'odham culture. In addition, eagles are extremely prominent in the O'odham song culture (Anton and Garcia-Lewis 2009, p. 2). A paired set of songs recorded by Underhill (1938, p. 109) for a Tohono O'odham eagle purification ceremony recognized the bald eagle as the "white-headed eagle."

More recent evidence exists to demonstrate the importance and use of bald eagles in Apache culture. Herrington *et al.* (1939, pp. 13–15) noted the use of eagle feathers in religious practices and ceremonial dances. The Apache Tribes have documented numerous artifacts that were collected from the Tribes at Cibecue and East Fork/Whiteriver on the White Mountain Apache Reservation and on the San Carlos Reservation between 1901 and 1945. These Tribes note that these artifacts were made, in part, with eagle feathers, and include hats or caps; shields; medicine rings, shirts, and strings; amulets; war bonnets; armbands; hair ornaments; and wooden figurines and crosses. The Tribes note that these ceremonial items are of deep historical and ongoing importance, such that they are actively pursuing their return from the museums to the Tribes. The existence of these items demonstrates the use of eagle feathers by the Tribes for at least the last 100 years (Apache Tribes 2009, Tabs 6–10).

Traditional ecological knowledge from the Apache Tribes report more breeding bald eagles 150 years ago than are present today. Specifically, Tribal representatives note that many areas that were considered nesting sites on the San Carlos Apache Reservation such as Warm Springs Canyon, Black River Canyon, and Salt Creek Canyon no longer contain active bald eagle nests. Bald eagles are no longer found at four out of seven areas that have Apache place-names that reference bald eagles (Lupe *et al.* pers. comm. 2008, p. 4). The traditional ecological knowledge shared by the Tribes at a July 2, 2008, meeting indicate that more bald eagles were observed below Coolidge Dam and at Talkalai Lake than currently exist.

Nevada

There are few historical or current breeding records for the State of Nevada. The lone historical record describes bald eagles that nested in a cave on an island at Pyramid Lake in northwestern Washoe County in northwestern Nevada in 1866 (Service 1986, p. 7; Detrich 1986, p. 11; S. Abele, Service, pers. comm. 2008a; 2008b). Over 100 years later, the next verified nesting record occurred in 1985 along Salmon Falls Creek in Elko County in northeastern Nevada near the Idaho border. More modern nesting records are limited to approximately five breeding sites associated with human-made water impoundments. Reproductive performance and persistence of bald eagle pairs in Nevada has been varied. No breeding has been observed at the Salmon Falls site since 1985.

Colorado

According to the Northern Bald Eagle Recovery Plan, bald eagles in Colorado historically nested in the mountainous regions up to 10,000 ft (3,048 m). Successful nesting records exist for nests found in southwestern and west-central Colorado. Bald eagles were considered common residents in the 1940s and 1950s in and around Rocky Mountain National Park (Service 1983, p. 12). For southwestern Colorado, there were no verified records of nesting bald eagles in the 1960s (Bailey and Niedrach 1965 in Stahlecker and Brady 2004, p. 2). The first confirmed record for southwestern Colorado occurred in 1974 at Electra Lake (Winternitz 1998 in Stahlecker and Brady 2004, p. 2). In 1974, the Colorado Division of Wildlife reported that only a single nesting pair was known (Colorado Division of Wildlife 2008, p. 1). However, by 1981, there were five known occupied bald eagle territories in the State of Colorado (Service 1983, p. 23), and from the early 1980s to 2008, the known bald eagle population increased to nearly 80 territories, of which 60 are currently known to be active. Concentrations of breeding eagles are found east of the Continental Divide within the South Platte River watershed, on the Yampa River, on the White River, and on the Colorado River. Greater than 40 territories are monitored annually, with near 70 percent nest success, 1.19 young fledged per occupied site, and 1.72 young fledged per successful site (Colorado Division of Wildlife 2008, p. 1).

New Mexico

Available information indicates there was no specific, first-hand information on bald eagles nesting in New Mexico prior to 1979. Unverified reports (Bailey 1928, p. 180; Ligon 1961, p. 75) suggest one or two pairs may have nested in southwestern New Mexico, on the upper Gila River and possibly the San Francisco River, prior to 1928. These second-hand reports lacked specifics and may have referred to other species (Williams 2000, p. 1).

Since completion of the 1982 Recovery Plan, seven bald eagle territories have been discovered, five in northern New Mexico in Colfax and Rio Arriba Counties and two in southwest New Mexico in Sierra and Catron Counties. Four have been recently occupied and productivity has been fair with young produced in at least 6 to 15 years, depending on the territory (H. Walker, New Mexico Department of Game and Fish, pers. comm. 2008).

Southern California

In southern California, historical bald eagle records are known from the Channel Islands and mainland counties along the Pacific Ocean (Detrich 1986, pp. 9–27). Prior to 1900, three bald eagle territory records were known (Detrich 1986, pp. 10–13). From 1900 to 1940, reports of 24 to 60 nest sites existed on islands off the coast of California, and are believed to have been extirpated from the islands soon after 1958 (Detrich 1986, pp. 18, 24). In inland areas in southern California, at least eight bald eagle pairs were known from Santa Barbara, Ventura, Los Angeles, Orange, and San Diego counties between 1900 and 1940, with indications of presence prior to this timeframe (Detrich 1986, pp. 13–19). By 1981, largely due to adverse changes to bald eagle habitat and the effects of the pesticide DDT on reproduction, no breeding eagles were detected on the southern California mainland (Detrich

1986, pp. 32, 33, 36, 39; California Department of Fish and Game 2008, p. 2).

Beginning in 1980, bald eagles were translocated to Santa Catalina Island as chicks or eggs from wild nests on the mainland, or from captive breeding. Pairs of bald eagles have been breeding on the island since 1987. In a subsequent relocation effort between 1987 and 1995 in the central coast mountains of Monterey Bay, 66 eaglets were translocated and released. A nesting pair first formed from those releases in 1993, and there are currently three nesting pairs (California Department of Fish and Game 2008, pp. 2–3). Releases of birds occurred through 2000, with no releases conducted between 2002 and 2008 (Ventana Wildlife Society 2009, p. 1). Currently, there are approximately six pairs of bald eagles on Catalina Island, with an additional three pairs at Santa Cruz Island, and one pair at Santa Rosa Island. There are approximately 35 to 40 bald eagles around the Northern Channel Islands, and another 20 birds around Catalina, for a total of approximately 60 birds among the Channel Islands (A. Little, pers. comm. 2008).

Presently, mainland southern California nesting bald eagles occur at inland isolated manmade reservoirs. Bald eagle breeding sites can be found in northwestern San Luis Obispo County (San Antonio and Nacimiento Lakes), central Santa Barbara County (Lake Cachuma), southwestern San Bernardino County (Silverwood Lake), extreme eastern San Bernardino County near the Colorado River (Copper Basin Lake), southwestern Riverside County (Hemet and Skinner lakes), and central San Diego County (Lake Henshaw) (AGFD 2008, California Department of Fish and Game 2008, pp. 2–3; Driscoll and Mesta in prep. 2005, p. 110; Ventana Wildlife Society 2008, p. 1).

Nesting attempts at Silverwood and Hemet Lakes are considered sporadic (Service 2005, p. 110). At Skinner Lake, reproduction efforts in the mid-1990s were affected by DDT, and the nest area subsequently burned down (Driscoll and Mesta in prep. 2005; AGFD 2008). Nest sites in northwestern San Luis Obispo County appear to be very productive, producing eaglets in all but one year from 1993 to 2006 (Ventana Wildlife Society 2008, p. 7). For 2001 to 2008, two or three young have fledged annually from the Copper Basin breeding area, with the exception of 2004 when the nest was blown down (M. Melanson, Metropolitan Water District of Southern California, pers. comm. 2006a, 2007, 2008). The blue aluminum leg bands of one of the adult bald eagles at the Copper Basin site indicate that the bird likely originated in Arizona (M. Melanson, Metropolitan Water District of Southern California, pers. comm. 2006b).

Utah

Bald eagles were recorded as "more or less frequent" by Allen in 1871 (p. 164) in the vicinity of Ogden in northern Utah. There are seven historical records for Utah between 1875 and 1928, with five records of nesting bald eagles, and two other records of nonbreeding bald eagle observations, all located between Great Salt Lake and Utah Lake in northern Utah. In 1967, a nest was found to the south in Wayne County at Bicknell, and in 1972, an additional nest was located at Joes Valley Reservoir in San Pete County in central Utah, but it has since fallen. Additional records from the 1970s were of nests along the Colorado River at Westwater Canyon in 1975, and at the head of Westwater Canyon between 1973 and 1977. Beginning in 1983, nesting attempts occurred at three nesting territories in southeast Utah. Two of the territories were along the Colorado River near the eastern border of Utah, with the third near Castle Dale in the center of the State (Boschen 1995, pp. 7–8). Three known nest sites (Cisco, Bitter Creek, and Castle Dale) were reported following survey work completed in 1994. These three nest sites produced an average of approximately 1.4 nestlings, with 1.05 successfully fledged between 1983 and 1994 (Boschen 1995, p. 103). Approximately 11 breeding areas were known, considered active, and monitored between 1983 and 2005 (Darnell, Service, pers. comm. 2008).

West Texas

Historically, there were five nesting records for bald eagles west of the 100th Meridian in Texas. Lloyd (1887, p. 189) reported nesting in Tom Green and Concho counties in 1886. Oberholser (1974, p. 246) and Boal (2006, p. 46) reported eggs collected in Potter County near Amarillo by E.W. Gates in 1916. Oberholser (1974, in Service 1982, p. 8) additionally reported eggs collected by Smissen in 1890 in Scurry County south of Lubbock. Oberholser also reported an undated sight record of breeding eagles in Armstrong County near Amarillo. Kirby (pers. comm., in Service 1982) reported an active nest in nearby Wheeler County in 1938, and indicated it had been active for approximately 20 years. Throughout the 1980s and early 1990s there were no known breeding bald eagles in western Texas (Mabie *et al.* 1994, p. 215; Service 1982, p. 9). In 2004 and 2005, two adult bald eagles and a nestling were observed at a nest in the southern Great Plains of the Texas Panhandle. One young was produced in 2004, and two in 2005. No leg bands were readily observable on the adult eagles (Boal *et al.* 2006, pp. 246–247).

Sonora, Mexico

Bald eagle territories were first recorded in Sonora along the Rio Yaqui drainage in 1986 (Brown *et al.* 1986, pp. 7–14). Since that time, a total of seven bald eagle breeding areas were verified (Brown *et al.* 1986, pp. 7–14; Brown *et al.* 1987b, pp. 1–2, 1987b, p. 279; Brown 1988, p. 30; Brown and Olivera 1988, pp. 13–16; Brown *et al.* 1989, pp. 13–15; Brown *et al.* 1990, pp. 7, 9; Mesta *et al.* 1993, pp. 8–12; Russell and Monson 1998, pp. 62–63; Driscoll and Mesta 2005 in prep., pp. 78–90). Four of these bald eagle breeding areas have remained occupied (Driscoll and Mesta, in prep., pp. 78–90). However, reproductive performance of these nests has been relatively poor. Only a single nestling was recorded fledging in 2000 and 2001, and no successful nests were observed in 1999, 2002, and 2005 (Driscoll and Mesta in prep., p. 43). In 2008, no occupancy was detected at bald eagle territories (R. Mesta, Service, pers. comm. 2008). A bald eagle pair was observed in 2009; however, the previously used cliff nest is gone, and a new nest was not confirmed. Illegal drug activity in the area has increased human presence, making survey work difficult to accomplish. The area is also affected by extensive water withdrawals, and drought and dam operations, leaving the future of this site uncertain (R. Mesta, Service, pers. comm. 2009).

Defining a Species Under the Act

Section 3(16) of the Act defines "species" to include "any species or subspecies of fish and wildlife or plants, and any distinct population segment of any species of vertebrate fish or wildlife which interbreeds when mature" (16 U.S.C. 1532(16)). To interpret and implement the distinct vertebrate population segment provisions of the Act and congressional guidance, the Service and the National Marine Fisheries Service (now the National Oceanic and Atmospheric Administration—Fisheries Service), published the *Policy Regarding the Recognition of Distinct Vertebrate Population Segments* (DPS Policy) in the **Federal Register** on February 7, 1996 (61 FR 4722). The DPS Policy sets forth a three-step process: First, the Policy requires the Service to determine that a vertebrate population is discrete

and, if the population is discrete, then a determination is made as to whether the population is significant. Lastly, if the population is determined to be both discrete and significant then the Policy requires a conservation-status determination to determine if the DPS is an endangered or threatened species.

Distinct Vertebrate Population Segment Analysis

In accordance with our DPS Policy, this section details our analysis of whether the vertebrate population segment under consideration for listing may qualify as a DPS. Specifically, we determine (1) the population segment's discreteness from the remainder of the species to which it belongs and (2) the significance of the population segment to the species to which it belongs. Discreteness refers to the ability to delineate a population segment from other members of a taxon based on either (1) physical, physiological, ecological, or behavioral factors, or (2) international boundaries that result in significant differences in control of exploitation, management, or habitat conservation status, or regulatory mechanisms that are significant in light of section 4(a)(1)(B) of the Act.

Under our DPS Policy, if we have determined that a population segment is discrete under one or more of the discreteness conditions, we consider its significance to the larger taxon to which it belongs in light of congressional guidance (*see* Senate Report 151, 96th Congress, 1st Session) that the authority to list DPSs be used "sparingly" while encouraging the conservation of genetic diversity. In carrying out this examination, we consider available scientific evidence of the population's importance to the taxon to which it belongs. This consideration may include, but is not limited to the following: (1) The persistence of the population segment in an ecological setting that is unique or unusual for the taxon; (2) evidence that loss of the population segment would result in a significant gap in the range of the taxon; (3) evidence that the population segment represents the only surviving natural occurrence of a taxon that may be more abundant elsewhere as an introduced population outside of its historic range; and (4) evidence that the discrete population segment differs markedly from other populations of the species in its genetic characteristics.

The first step in our DPS analysis was to identify populations of the Sonoran Desert Area population to evaluate. The petition from CBD, the Maricopa Audubon Society, and the Arizona Audubon Council requested that the "Southwestern desert nesting bald eagle population" be classified as a DPS, that this DPS be reclassified from a threatened species to an endangered species, and that we concurrently designate critical habitat for the DPS under the Act.

Determination of the Area for Analysis

The March 6, 2008, court order directed the Service to conduct a status review of the "Desert bald eagle population." The population referenced in the court order consists of those bald eagles in the Sonoran Desert of the southwest that reside in central Arizona and northwestern Mexico. While we had specific clarification from the petitioners with respect to elevational boundaries, bald eagle breeding areas, the Upper and Lower Sonoran Life Zones, and the State of Arizona, they provided ambiguous clarification with respect to the boundaries of "central Arizona" and which transition areas outside of the Upper and Lower Sonoran Life Zones to include. Because of these ambiguities and lack of a specific map in the petition, we were left to interpret them, primarily at the perimeters of the boundary.

In responding to the court order, we published a rule on May 1, 2008, reinstating threatened status under the Act to the bald eagle in the Sonoran Desert Area of Central Arizona in eight Arizona counties: (1) Yavapai, Gila, Graham, Pinal, and Maricopa Counties in their entirety; and (2) southern Mohave County (that portion south and east of the centerline of Interstate Highway 40 and east of Arizona Highway 95), eastern LaPaz County (that portion east of the centerline of U.S. and Arizona Highways 95), and northern Yuma County (that portion east of the centerline of U.S. Highway 95 and north of the centerline of Interstate Highway 8). We limited the reinstatement of threatened status to these areas because Sonoran Desert bald eagles were only listed under the Act in Arizona (and not in Mexico) at the time of the petition. Therefore, the court's order enjoining our final delisting decision applied only to those eagles that reside in the Sonoran Desert of central Arizona.

For this status review, we revisited the issue of defining the potential DPS based on a more in-depth review of information received from the public, Tribes, and information in our files. We determined that an appropriate delineation for this analysis includes all Sonoran Desert bald eagle territories within Arizona, the Copper Basin breeding area along the Colorado River just into California, and the territories of Sonora, Mexico. This expanded boundary was developed using vegetation community boundaries, elevation, and breeding bald eagle movement. This interpretation combines geographic proximity and recognized Sonoran Desert vegetation and transition life zones. We determined the transition areas based on our knowledge of their proximity to the Sonoran Desert itself, excluding territories more properly classified as montane or grassland habitat. Bald eagles in Baja California, Mexico, occur in an area where the Sonoran Desert vegetation community abuts a coastal environment. We excluded bald eagles in this area because they depend on marine resources rather than inland fisheries. We based delineation of the potential DPS on the best available scientific information, including the parameters provided by CBD (*i.e.,* bald eagle territories, elevation, life zones, and transition areas), and the resulting expanded boundary includes known bald eagle breeding areas within the Sonoran Desert vegetation community and transition areas, as defined by Brown (1994, pp. 181–221), except Baja California.

As noted above, we included Sonora, Mexico, in the potential DPS because both areas have the same vegetation and climate. Bald eagles in Sonora use Sonoran Desert and transition vegetation communities as do bald eagles in the Sonoran Desert areas of Arizona and southern California. In addition, breeding season chronology in both areas appears to be similar (Driscoll *et al.* 2005 in prep., pp. 31–32), occurring between December and June. Bald eagles in Sonora also nest in riparian trees and cliffs, as they do in Arizona (Driscoll *et al.* 2005 in prep., p. 31).

When based strictly on vegetation or elevation lines, the expanded boundary is irregular and complex, and would be difficult to interpret. For this reason, we delineated the boundary with more easily identifiable road, county, and State lines.

Discreteness

Under the DPS Policy, a population segment of a vertebrate taxon may be considered discrete if it satisfies either one of the following conditions:

(1) It is markedly separated from other populations of the same taxon as a consequence of physical, physiological, ecological, or behavioral factors. Quantitative measures of genetic or morphological discontinuity may provide evidence of this separation.

(2) It is delimited by international governmental boundaries within which differences in control of exploitation,

management of habitat, conservation status, or regulatory mechanisms exist that are significant in light of section 4(a)(1)(D) of the Act.

Boundaries of the Potential DPS

Many terms have been used in describing the bald eagles that occupy the desert southwest, and we identify here the geographic area covered by the various terms. At the broadest geographic scale, bald eagles were managed under the Southwest Bald Eagle Recovery Region, which encompassed Oklahoma, Texas west of the 100th meridian, all of New Mexico and Arizona, and those portions of southeastern California that border the lower Colorado River. Bald eagles within this area were called "southwestern bald eagles" (Service 1982, p. 1). Much of the data used in the development of the potential DPS boundary for this discreteness analysis came from those eagles within the boundaries of the State of Arizona. The petition that initiated this 12-month status review referred to the Southwestern Desert Nesting Bald Eagle Population, which included those eagles that breed predominantly in the upper and lower Sonoran life zone habitat. In our August 30, 2006, analysis at the 90-day petition finding stage (71 FR 51549), we evaluated "Sonoran Desert bald eagles," which included those bald eagles in the Sonoran Desert of central Arizona and northwest Mexico.

In analyzing the potential DPS under this 12-month status review, we considered habitat use by bald eagles breeding in the Southwest, vegetation communities in which breeding areas occur, and elevation levels at which breeding areas occur, as we did at the 90-day petition finding stage. However, we have reevaluated all potential areas including those considered in the 90-day finding to include any areas that meet the criteria described below. As a result, in this review, we did not restrict the boundary to the State of Arizona and have expanded the area covered by our previous analysis to include portions of southeastern California along the Colorado River, Arizona, and Sonora, Mexico. We now refer to this expanded potential DPS area as the Sonoran Desert Area population, which replaces the term "Sonoran Desert Area of central Arizona," as described in our May 1, 2008, **Federal Register** rule (73 FR 23966) to list the Sonoran Desert bald eagle as threatened.

To determine which areas should be included within the expanded boundary for the Sonoran Desert Area, we considered three factors: (1) The Sonoran Desert vegetation community (Brown 1994, pp. 180–221; Brown and Lowe 1994, map), (2) an elevational range for known breeding areas within the Sonoran Desert (excluding Baja California), and (3) movement patterns of breeding bald eagles both into and out of the Sonoran Desert Area. We included within the boundary portions of the Sonoran Desert, including its subdivisions and "transition areas." Subdivisions of the Sonoran Desert include the Lower Colorado River Valley, Arizona Upland, Vizcaino, Central Gulf Coast, Plains of Sonora, and Magdalena (Brown 1994, pp. 190–221). Transition areas are those vegetation communities adjacent to the Sonoran Desert community. Brown (1994, p. 181) includes as transition areas semidesert grasslands, Sinaloan thornscrub, and chaparral. The majority of the breeding areas within the boundary occur in the Arizona Upland Subdivision of the Sonoran Desert. Exceptions include those breeding areas in the transition communities (where 14 of 61 breeding areas are located) of Interior Chaparral, Plains & Great Basin Grassland, Semidesert Grassland, and Sinaloan Thornscrub (Brown 1994). These communities are most often adjacent to the Arizona Upland Subdivision of the Sonoran Desert, where bald eagles in these areas forage at least partially within the desertscrub.

We also based the boundary on those portions of the Southwest within the elevational range of 984 to 5,643 ft (300 to 1,720 m). This elevational range encompasses all known bald eagle breeding areas within the Sonoran Desert in the United States and Sonora, Mexico. Using Geographic Information Systems, the appropriate elevational ranges were overlapped with the Sonoran Desert vegetation community to determine where both criteria were met.

We also considered information on movement of bald eagles into and out of the Sonoran Desert, as determined through banding and monitoring information. Specifically, we included within the boundary those bald eagles known to originate in or breed in the Sonoran Desert and transition areas, excluding Baja California. The banding and monitoring information used to determine eagles originating or breeding in the Sonoran Desert Area is described in detail below.

Figure 1 below illustrates the boundary developed based on vegetation community, elevation, and breeding bald eagle movement. The boundary was modified from following strictly elevational or vegetation lines to follow more easily identifiable road, county, and State lines.

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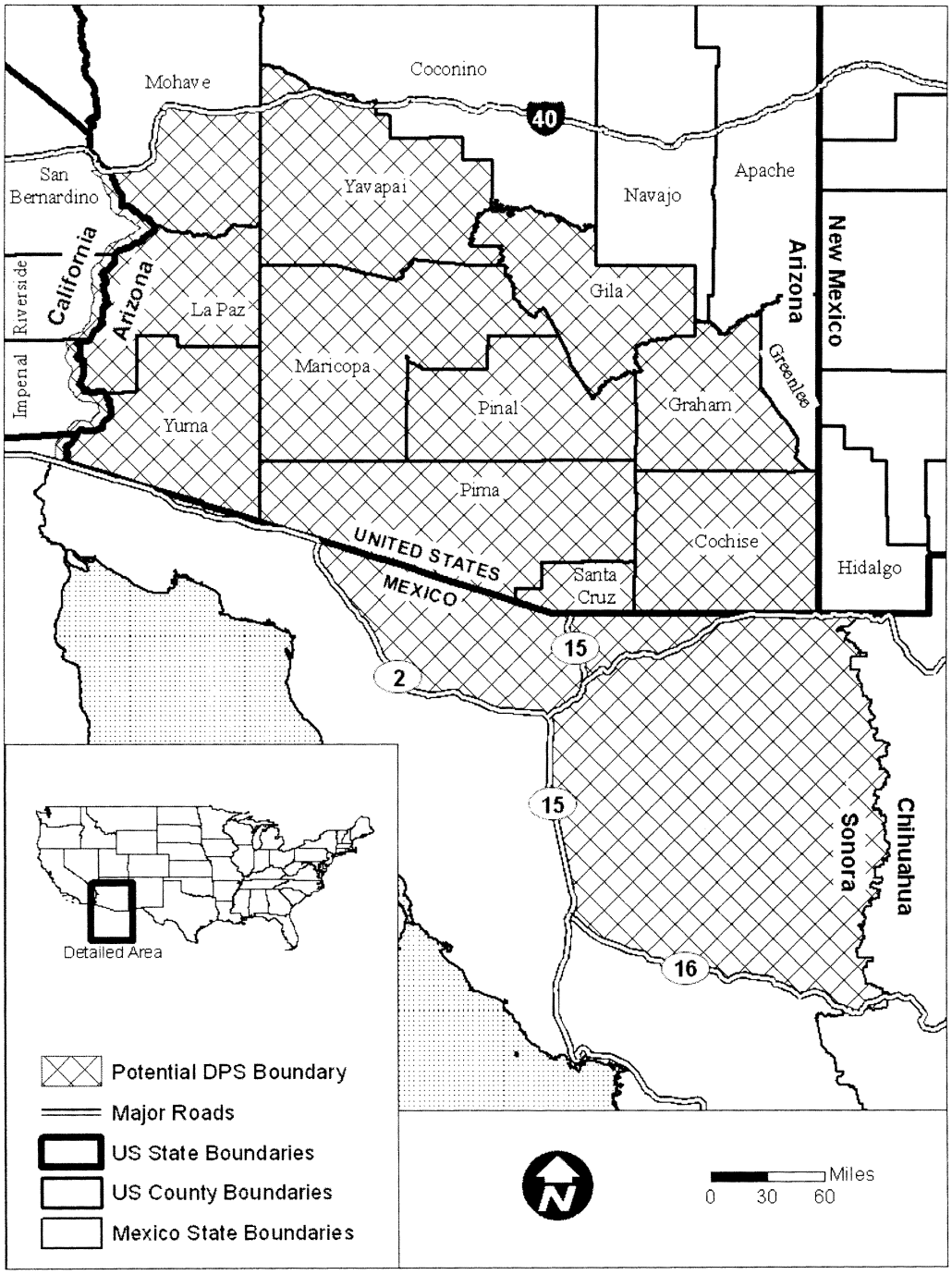

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The northern perimeter of the expanded potential DPS boundary in Arizona is the same as the potential DPS boundary that we used in our May 1, 2008, **Federal Register** notice (73 FR 23966) to list the Sonoran Desert bald eagle DPS as threatened. This boundary follows the southern edges of Coconino, Navajo, and portions of Apache Counties. It follows the Graham County line south on the east side until it reaches the Cochise County boundary.

On the west, the boundary drops south along the Mohave-Yavapai boundary until it reaches Interstate 40. The discreteness boundary then follows Interstate 40 west until its intersection with the State boundary. It continues west 5 miles (mi) (8 kilometers (km)) and then south along a line drawn 5 mi (8 km) west of and parallel to the Colorado River until it reaches Highway 2 in Sonora, Mexico.

The southern boundary of the expanded potential DPS follows Highway 2 in Mexico east until its intersection with Highway 15. It follows Highway 15 until its intersection with Highway 16. The southern boundary continues along Highway 16 until it reaches the State boundary between Sonora and Chihuahua. The eastern boundary of the expanded potential DPS follows the State line between Sonora and Chihuahua north until it reaches the international boundary between the United States and Mexico at New Mexico, and continues west to the State boundary between Arizona and New Mexico. The eastern boundary then continues north along Cochise County, turning slightly west along the northern edge of Cochise County before rejoining the northern perimeter.

Bald eagles within the boundary that constitute the expanded potential DPS include those that occur within the appropriate vegetation communities and elevational range. The breeding area located in southeastern California is within the Lower Colorado River subdivision of the Sonoran Desert. In addition, the bald eagles at that breeding area originated at the Horseshoe Breeding Area in Arizona. We have included Sonora, Mexico, within the potential DPS because bald eagles occur in Sonoran Desert and transitional communities there, as do those in Arizona and California. As discussed above, we have excluded from the expanded potential DPS bald eagles occurring in Baja California, Mexico.

There are additional bald eagle breeding areas within Arizona but outside of the expanded potential DPS boundary. These breeding areas include Canyon de Chelly, Luna, Becker, Crescent, Greer, Woods Canyon, and Lower Lake Mary. These breeding areas were excluded because they are not located within the Sonoran Desert.

Banding and Monitoring Information

Bird banding and resighting are important tools used to answer questions regarding the biology and movement of individual birds (U.S. Geological Survey 2008, p. 1). The techniques used on bald eagles in the Southwest are consistent with marking technique standards (Varland *et al.* 2007, pp. 222–228). Within this analysis, we use banding and resighting data for bald eagles to determine if bald eagles in the Sonoran Desert Area are markedly separate from other breeding populations of bald eagles. Specifically, we use banding and resighting data to determine if bald eagles originating in areas outside the Sonoran Desert Area have moved into the Sonoran Desert Area to breed (immigration), or if bald eagles originating in the Sonoran Desert Area have moved out of the Sonoran Desert Area to breed (emigration).

We used bald eagle banding and resighting information collected between 1987 and 2007 as this is the time period during which banding and resighting efforts were most thorough in the Southwest. Banding of bald eagle nestlings began prior to this time in Arizona, starting in approximately 1977, and multiple researchers contributed to early banding efforts (Hildebrandt and Ohmart 1978; Haywood and Ohmart 1980, 1981, 1982, 1983; Grubb 1986), as summarized in Hunt *et al.* 1992 (pp. C181–C202). However, early banding efforts were opportunistic, and the bands used at that time were difficult to read without capturing birds or recovering dead birds. As a result, little resight information was gained. Beginning in 1987, biologists increased efforts to band all nestlings and improved the effectiveness of banding and resighting by using color visual identification bands, which are more easily identified (Hunt *et al.* 1992, pp. C181–C202; Driscoll *et al.* 2006, p. 26). In total, the banding and resighting effort for bald eagles in Arizona has continued for 30 years with the last 20 years using the more informative color bands.

To determine the movement of breeding bald eagles in our target time period of 1987 to 2007, we relied on data from two datasets. The first dataset, called the Bird Banding Lab (BBL) dataset, is derived from data collected and collated by the U.S. Geological Survey Bird Banding Laboratory (U.S. Geological Survey 2008). The BBL dataset consists of over 19,000 records for bald eagles throughout the species' range, including those banded in the Southwest. The second dataset, called the AGFD dataset, is derived from data compiled and used by Allison *et al.* (2008) in a demographic analysis for bald eagles in Arizona.

Because our analysis focused on determining whether or not there is immigration or emigration of bald eagles to and from the Sonoran Desert Area, we analyzed bald eagles banded as nestlings and resighted as adults. Using only those birds banded as nestlings ensures that the origin of the banded birds is known, and that young birds originating in other areas are not included in the analysis. Using only resight information for breeding bald eagles eliminates data associated with juvenile migrants, which would not be contributing to the breeding population. Generally, age five is accepted as the age at which adult bald eagles breed throughout most of the species' range. For this reason, when evaluating the nationwide BBL dataset, we considered bald eagles 5 years of age or older as breeding adults. However, for the AGFD dataset, where there are numerous instances of bald eagles breeding at 4 years of age in Arizona (Allison *et al.* 2008), we considered bald eagles 4 years of age or older as breeding adults.

Immigration Into the Sonoran Desert Area

For purposes of this analysis, immigration is defined as the movement of individuals banded as nestlings outside of the Sonoran Desert Area that are subsequently resighted as breeding birds inside the Sonoran Desert Area. In our analysis of the likelihood of bald eagle immigration into the Sonoran Desert Area from areas in closest proximity to the Sonoran Desert Area, we used data from the AGFD and the broader BBL dataset and considered bald eagle banding and resighting information from the States in proximity to the Sonoran Desert Area, including California, Colorado, Nevada, New Mexico, Texas, and Utah, as well as birds in Arizona but outside of the Sonoran Desert Area (*see* Table 1).

TABLE 1—RECORDS FOR BALD EAGLES BANDED AS NESTLINGS IN AREAS OUTSIDE THE SONORAN DESERT AREA AND RESIGHTED AS BREEDING BIRDS FROM 1987 TO 2007 (U.S. GEOLOGICAL SURVEY 2008; K. MCCARTY, AGFD, PERS. COMM. 2009; DRISCOLL *et al.* 2006, P. 49)

[Please note that the table summarizes data from 1987 to 2007. Available data from 2008 are not as thorough, but they are consistent with the findings from the data reported. Further, the Texas bird resighted in Arizona occurs at a high-elevation nest outside of the Sonoran Desert area. Note we know of no banding information for birds banded in Mexico outside the Sonoran Desert area]

State where banded	Number of nestlings banded in areas in close proximity to the Sonoran Desert area between 1987 and 2002	Number of banded nestlings resighted as breeding birds between 1987 and 2007	States where banded eagles were re-sighted	Number of resightings in the Sonoran Desert area
Arizona outside the Sonoran Desert Area	12	0	.....	0
California	103	13 (12.6%)	British Columbia, CA, WA	0
Colorado	152	7 (4.6%)	CO, WY	0
Nevada	0	0 (0%)	.....	0

TABLE 1—RECORDS FOR BALD EAGLES BANDED AS NESTLINGS IN AREAS OUTSIDE THE SONORAN DESERT AREA AND RESIGHTED AS BREEDING BIRDS FROM 1987 TO 2007 (U.S. GEOLOGICAL SURVEY 2008; K. MCCARTY, AGFD, PERS. COMM. 2009; DRISCOLL *et al.* 2006, P. 49)—Continued

[Please note that the table summarizes data from 1987 to 2007. Available data from 2008 are not as thorough, but they are consistent with the findings from the data reported. Further, the Texas bird resighted in Arizona occurs at a high-elevation nest outside of the Sonoran Desert area. Note we know of no banding information for birds banded in Mexico outside the Sonoran Desert area]

State where banded	Number of nestlings banded in areas in close proximity to the Sonoran Desert area between 1987 and 2002	Number of banded nestlings resighted as breeding birds between 1987 and 2007	States where banded eagles were re-sighted	Number of resightings in the Sonoran Desert area
New Mexico	0	0 (0%)		0
Texas	64	5 (7.8%)	AZ, CA, NE, NM, TX	0
Utah	6	0 (0%)	UT	0
Total	337	25 (7.4%)		0

Using the AGFD dataset, Allison *et al.* (2008, p. 25) indicate that anticipated survival rates for fledglings to age four is 28 percent. It should be noted that the mortality rates derived by Allison *et al.* (2008, p. 4) are based on modeling; however, the model was based on data collected over a 10-year period from 1993 to 2003.

The information summarized in Table 1 indicates that 337 bald eagles were banded as nestlings between 1987 and 2002 (the latest year for which a banded cohort could reach 5 years of age by 2007) in the areas outside of but in proximity to the Sonoran Desert Area. Applying the survival rate of 28 percent to the 337 bald eagles reported banded as nestlings in Table 1, we would anticipate that approximately 94 nestlings would have survived to age four. Only 25 of the banded nestlings were resighted as adults, and the fate of the remaining 69 nestlings is unknown. However, none of the 25 banded nestlings were resighted as breeding birds within the Sonoran Desert Area (*see* Table 1).

While the number of banded and resighted birds in Table 1 is small, given the intensive effort in Arizona to identify the origins of banded breeding birds, we believe some inference is possible suggesting that the probability of nestlings originating outside of the Sonoran Desert Area and immigrating into the Sonoran Desert Area to breed is low.

There is no known immigration from the Canyon de Chelly, Lower Lake Mary, Becker, Woods Canyon, Crescent, Greer, and Luna Lake breeding areas located at higher elevations within Arizona outside of the Sonoran Desert Area. To date, 29 nestlings produced at these breeding areas have been banded. Twenty-five of these were banded at the Luna breeding area from 1994–2000, 2002–2005, and in 2007, with 22 of them fledging successfully (K. McCarty, AGFD, pers. comm. 2009). As of 2008, none of these banded offspring are known to have entered the breeding population of bald eagles in the Sonoran Desert Area (AGFD 2008a, pp. 1–2). The male bird at the Crescent breeding area is from the Luna breeding area (the female is unbanded) (Jacobson *et al.* 2004, p. 16). Similarly, the male bird at the Greer breeding area is from the Luna breeding area, and the female is unbanded (McCarty and Jacobson 2008, p. 9). Lower Lake Mary fledged four young in 2005 and 2006, and the young were banded. The Woods Canyon and Greer breeding areas were first detected in 2008, and no young fledged that year from either breeding area. Six young have successfully fledged from Canyon de Chelly as of this date, none of which were banded (AGFD 2006, pp. 1–2; AGFD 2007, pp. 1–2; Jacobson *et al.* 2007, pp. 16–19; AGFD 2008a, pp. 48–49; AGFD 2008, unpubl. data; AGFD 2009, pp. 1–2).

Biologists, primarily R. Mesta, estimate that, due to difficulty in accessing territories in Sonora, Mexico, they are able to monitor approximately 40 to 60 percent of the known nest sites each year, and 20 to 30 percent of the known birds are observed while visiting these territories. Approximately 80 percent of the birds detected have been examined for auxiliary markers, such as colored bands, and biologists believe that if marked bald eagles were occupying known territories after 1990, they would likely have been detected. However, they note that, in years in which surveys are conducted, breeding areas are visited only once and for a short period of time, which would make it easy to miss an individual eagle. They note that, in 1992, an adult at the Fig Tree breeding area had a yellow wing tag (potentially indicating it had originated in Texas or Florida) that could not be read, but no one has observed the bird since ((Driscoll and Mesta 2005, in prep., p. 62; R. Mesta, Service, pers. comm. 2008, Ortego *et al.* 2009, p. 10).

Emigration From the Sonoran Desert Area

Emigration is defined here as the movement of individuals originating in the Sonoran Desert Area to areas outside the Sonoran Desert Area where they are resighted as birds of breeding age. Our analysis of data from the BBL dataset found that 41 of the 42 nestlings (97.6 percent) banded within the Arizona portion of the Sonoran Desert Area were subsequently resighted within the Sonoran Desert Area. Only one eagle (2.4 percent) of breeding age was resighted outside of the Sonoran Desert Area, near Temecula, California (*see* Table 2). The BBL dataset shows that there were 371 bald eagles banded in Arizona between 1987 and 2007. With anticipated survival rates from fledgling to 4 years of age at 28 percent, we estimate that approximately 104 nestlings should have survived to age four. While we know that 42 were resighted, the fate of the remaining 62 birds is unknown.

TABLE 2—BALD EAGLES BANDED IN ARIZONA BETWEEN 1987 AND 2002 AND RECAPTURED OR RESIGHTED AS BIRDS OF BREEDING AGE

[U.S. Geological Survey 2008)]

State	Number of birds (% recovered)	Notes
Within the Sonoran Desert Area		
Arizona	40 (95.2%)	
Sonora, Mexico	1 (2.4%)	Records indicate this bird was an adult entangled in fishing line at El Novillo Reservoir in Sonora. There was no breeding area at the reservoir, and the bird was not subsequently detected at a breeding area.
Subtotal	41 (97.6%)	
Outside of the Sonoran Desert Area		
California	1 (2.4%)	This bird established a breeding area in California near Temecula. Birds in this breeding area were not successful in reproducing, and the nest site subsequently burned down (AGFD 2008a, p. 6).
Colorado	0 (0%)	
Nevada	0 (0%)	
New Mexico	0 (0%)	
Oklahoma	0 (0%)	
Texas	0 (0%)	
Utah	0 (0%)	
Subtotal	1 (2.4%)	
Total	42 (100%)	

With respect to emigration, data in the AGFD dataset, a separate dataset than the BBL discussed above, illustrate the fate of 89 of 314 nestlings banded within the Sonoran Desert Area. Only 1 of the 89 birds was documented breeding outside the Sonoran Desert Area. Fifty returned to breed in the Sonoran Desert Area, 1 bred (unsuccessfully) in California, and 38 were known to have died before breeding (*see* Table 3) (Allison *et al.* 2008, p. 19). Allison *et al.* (2008, p. 7) note that, from 1987 through 2003, 83 percent of known fledglings in the Sonoran Desert Area were banded. Traditional ecological knowledge about bald eagles supports these data on emigration. Western Apache informants having expert knowledge of bald eagles in the Sonoran Desert Area testified that adult eagles do not leave Arizona.

TABLE 3—DISPOSITION OF ARIZONA BALD EAGLES BANDED AS NESTLINGS FROM 1987 TO 2003

[Allison *et al.* 2008, p. 19]

Fate of nestlings	Number of eagles
Dead before fledging	123
Unbanded Nestlings	62
Banded Nestlings—Fate Unknown	225
Banded Nestlings—Fate Known	
Dead before Breeding	38
Bred in Arizona	50

TABLE 3—DISPOSITION OF ARIZONA BALD EAGLES BANDED AS NESTLINGS FROM 1987 TO 2003—Continued

[Allison *et al.* 2008, p. 19]

Fate of nestlings	Number of eagles
Bred in California	1
Total	499

Banding and resighting efforts have not been as intensive in the areas in close proximity to the Sonoran Desert Area as they have been in Arizona, including the Sonoran Desert Area. We sent a questionnaire to bald eagle biologists in surrounding States in 2008 in an attempt to determine the level of banding and monitoring efforts in some of these regions. In response to the questionnaire, we determined that surveys for breeding birds occur annually at Santa Cruz and Santa Rosa Islands off the coast of California, as well as in southern California at Lake Hemet. In survey efforts for these areas, all known territories and 100 percent of the known birds are visited, and no birds have bands or markers from Arizona (Hoggan 2008, pp. 1–2; P. Sharpe, pers. comm. 2008). Additionally, less-formal monitoring occurs in other areas in California through a variety of agencies and interested groups, including the U.S. Forest Service, the California Department of Fish and Game, the Ventana Wildlife Society, and the Channel Islands Live! Web site with similar results (*i.e.,* no birds with bands from Arizona have been reported). In addition, sites known to support breeding pairs, such as the Copper Basin site, are monitored regularly.

Six New Mexico territories have been monitored closely since their discovery in 1979, with no bands or markers from Arizona observed (S. Williams, pers. comm. 2008). Beginning in 1974, the Colorado Division of Wildlife began monitoring nesting activity, and currently monitors approximately 40 of their 80 nests each year, and bands eaglets at approximately one-third of those (Colorado Division of Wildlife 2008, p. 1). No bands or markers from Arizona were observed.

We have received no data for Utah or Nevada. Information on bald eagles banded within Arizona but outside the Sonoran Desert Area is summarized above under the "Immigration into the Sonoran Desert Area" discussion above.

The data from areas in close proximity to the Sonoran Desert Area are not as thorough as those collected in Arizona, including in the Sonoran Desert Area. However, the banding and monitoring effort for breeding bald eagles in Arizona over a 30-year period has revealed only one breeding bird to date that immigrated into Arizona (Luna Lake, outside the Sonoran Desert Area).

We anticipate that, if immigration is occurring at such a low level, the same could be true of emigration as there are no known barriers that would favor emigration over immigration.

Conclusion on Banding Data

We find that the data on banding and resighting, while not extensive for areas in proximity to the Sonoran Desert Area, are collectively sufficient to document that bald eagles in the Sonoran Desert Area experience limited or rare reproductive interchange with bald eagles outside the Sonoran Desert Area. Bald eagle banding and resighting studies have been ongoing for greater than 30 years in Arizona, with the last 20 years using the more informative color bands. As reported in the BBL dataset, of the 79 nestlings banded in Arizona and later resighted, 1 emigrated to California, outside of the Sonoran Desert Area, and never successfully reproduced. This finding indicates that 97.6 percent of the bald eagles banded and resighted as breeding birds originated and returned to breed in the Sonoran Desert Area, with only 2.4 percent (one bird) of breeding birds resighted in other areas (Table 2). Similarly, the AGFD dataset indicates that, for the nestlings banded between 1987 and 2003 in areas outside of but in close proximity to the Sonoran Desert Area and resighted as breeding birds, none have immigrated to breed in the Sonoran Desert Area.

While it is not possible to band and resight all bald eagles as breeding birds, the information provided suggests that the majority of breeding bald eagles within the Sonoran Desert Area population originated in the Sonoran Desert Area population, and have not been known to emigrate elsewhere to become part of a breeding population. There is one documented case of emigration for a bald eagle that originated in Arizona and established a breeding area outside of the Sonoran Desert Area in Temecula, California. No successful reproduction occurred, and that nest subsequently burned down (AGFD 2008a, p. 6).

Data have been collected over a substantial time period under this effort, during which only one instance of a possible immigration and only one instance of emigration have been observed within the Sonoran Desert Area. We believe it is reasonable to conclude that in rare instances, immigration or emigration of an occasional bald eagle may occur; however, we consider the results from this 20-year period sufficient to document a marked separation of breeding populations. Our DPS Policy does not require complete isolation, and allows for some limited interchange among population segments considered to be discrete (61 FR 4722; February 7, 1996). Based on the results of these banding and resighting data in Arizona and in neighboring States, we conclude that the Sonoran Desert Area bald eagles are not interbreeding with other populations, although some intermixing may occur at a very small rate. We conclude that the best scientific data available indicates a marked separation of Sonoran Desert Area bald eagles from bald eagles outside of the Sonoran Desert Area.

Natal Dispersal and Fidelity

Bald eagles are known to return close to their place of birth to breed (Stahlmaster 1987, p. 41). To illustrate the potential for breeding bird exchange between populations, the Service examined the records of bald eagles that were banded as nestlings and recovered 5 or more years later at breeding age. We analyzed data associated with the eagles in the lower 48 States to derive a median dispersal distance of 43 mi (69 km) from their natal site to their breeding area. Known nesting sites were then buffered by 43 mi (69 km) to determine the amount of breeding bird exchange that typically occurs (Service 2008, pp. 17–18). Based on this analysis, Sonoran Desert Area bald eagles in the United States are separated from other southwestern populations by distances exceeding the median dispersal distance of 43 mi (69 km) for the species. The higher elevation breeding areas in Arizona are an exception to this separation, as they are less than 43 mi (69 km) from Sonoran Desert Area bald eagles; however, we believe these birds to be reproductively isolated from Sonoran Desert Area bald eagles, as described in the discussions on immigration above.

Observations of actual dispersal behavior support the same conclusion as that derived from the modeling exercise discussed above. Hunt *et al.* (1992, p. A144) surveyed biologists studying nine bald eagle populations throughout North America consisting of more than 2,000 breeding pairs of bald eagles. Of those breeding pairs, only two adults were observed to breed outside of their natal area. Mabie *et al.* (1994, p. 218) similarly concluded through their study in Texas and the Greater Yellowstone ecosystem that bald eagles tend to breed near their natal area. Gerrard *et al.* (1992, pp. 159, 164) observed four marked adults in Saskatchewan, Canada, and determined that they bred within 15.5 mi (25 km) of their natal territory.

Natal dispersal patterns for Sonoran Desert Area bald eagles are similar to those in the studies discussed above. Data from 21 female and 35 male bald eagles in Arizona indicate that adult females dispersed an average of 68.1 mi (109.7 km) from their natal areas, while males dispersed an average of 28.0 mi (45.1 km) from their natal areas to breed (Allison *et al.* 2008, p. 30), but remained within the Sonoran Desert Area.

Morphological Differences

Emigration and immigration may also be influenced by the morphology of birds in different populations. Breeding bald eagles in the Sonoran Desert Area are smaller than those in northern States, which is typical of species in different latitudes (AGFD 2008a, p. 1). This is consistent with Bergmann's Rule, which states that in the northern hemisphere, animals in warmer, southern environments are generally smaller than their counterparts in cooler northern climates (Futuyma 1986, pp. 104–105). Stahlmaster (1987, pp. 16–17) found that northern eagles are larger and heavier than their southern counterparts. Hunt *et al.* (1992, pp. A158–A161) compared the means of nine standard morphological measurements (*e.g.,* tail length, weight, beak depth) from adult eagles in Arizona to those from Alaska, northern California, and the Greater Yellowstone ecosystem. Measurements from adult Arizona eagles were smaller than mean measurements of other populations for all morphological characteristics except two: Depth of the bird's leg bone and arc of its wing. Using a statistical analysis (t-Test), 26 different comparisons were made between the nine morphological characteristics. Test results indicated that male Arizona eagles were significantly smaller than males of the other three populations in 21 of those 26 comparisons (Hunt *et al.* 1992, p. A160; Driscoll and Mesta 2005, in prep. p. 60). Adult females from Arizona were significantly smaller than females of the other populations in 14 of 26 comparisons. Gerrard and Bortolotti (1988, p. 14) note that bald eagles in Florida that are farther south than Arizona are the smallest. Hunt *et al.* (1992, p. A165) indicate the size difference was significant enough that they believed a decision to release birds into Arizona from elsewhere should be considered only as a last resort, because the size difference could potentially be an adaptation to desert conditions which could be disrupted by the introduction of foreign genes. As discussed below, given that all bald eagles in southern latitudes are smaller than those at northern latitudes, the best

available information suggests that that the Sonoran Desert Area bald eagles do not provide any unique adaptations important to the conservation of the species as a whole.

Another possible adaptation mentioned by bald eagle experts is the possible differences in egg shell characteristics of Arizona bald eagles from bald eagles in other parts of the range of the species. Hunt *et al.* (1992) discuss pores in eggshells of bald eagles in Arizona and some of the public comments (including some eagle experts) questioned whether or not these pores may have an effect on water loss from bald eagle eggs in the arid environment. Hunt *et al.* (1992) note that the pores are actually one to two orders of magnitude smaller than those in California bald eagle eggs; however, they did not reach any conclusions as to the significance that this may have to Arizona eagles. We also do not draw any conclusions from this information given the small sample size (four eggs).

Morphological differences, whether due to local adaptations due to natural selection and a small amount of gene flow (Hunt *et al.* 1992, p. A163) or simply to Bergmann's Rule, may reduce the success of immigration and emigration efforts. Bergmann's Rule holds that the surface area to body weight ratio decreases as body weight increases, meaning that a large body loses proportionately less heat than a small one, which is advantageous in a cool climate, but disadvantageous in a warm one (Allaby 1991, p. 52). Thus if birds from further north immigrated into Arizona they could be at a competitive disadvantage coping with the hot climate during the breeding season. Similarly, if Arizona birds emigrated to far northern areas they would likely be at a competitive disadvantage for resources due to an inability to compete with birds in those areas, which are larger in size (AGFD 2008a, p. 5). In addition, Driscoll *et al.* 1999 (p. 223) note that if gene flow into Arizona from the north or west, where eagles are larger, had occurred, it should at least be reflected in the overall variance of measurable characteristics (*i.e.* standard morphological measurements for raptors such as tarsus width, length of feathers, arch of wing, *etc.*), and that they found no suggestion of that variance within the Arizona sample.

For these reasons, it is unlikely that bald eagles interchange in a north-to-south direction, or vice versa. The adult eagle that immigrated from Texas to establish a high-elevation nesting in Arizona, and the eagle that left Arizona to establish a breeding area (still within the Sonoran Desert Area) in extreme southeastern California near the Colorado River both dispersed laterally, with no north or south immigration or known emigration of breeding birds.

Lack of Population Sources

The immigration of adult bald eagles into the Sonoran Desert Area population from populations in relatively close proximity to the Sonoran Desert Area is likely limited by small population sizes in surrounding States, and their separation from the Sonoran Desert Area by long distances, over unoccupied habitats. There are currently eight known breeding areas in southern California in addition to populations on Santa Cruz and Santa Rosa Islands off the coast of California (California Department of Fish and Game 2008, pp. 2–3; Ventana Wildlife Society 2008, p. 1). Colorado has a somewhat larger population, with approximately 80 active breeding areas (Colorado Division of Wildlife 2008, p. 1). Nevada has approximately one inactive and five active breeding territories. Two territories, Carson River and Lahontan Reservoir, last had eagles detected in 2002 and 2006, respectively. The occupancy of two others is not yet confirmed. The remaining breeding area produced only two young from 1996 to 2007 (K. Kritz, Service, pers. comm. 2008). Utah has approximately 10 active territories and one inactive breeding territory (N. Darnall, Service, pers. comm. 2008). For New Mexico, the population of bald eagles consists of four currently occupied territories (H. Walker, NMDGF, pers. comm. 2009). West Texas currently has one active breeding territory west of the 100th Meridian. This territory has been active since 1994 (C. Boal, pers. comm. 2009).

Marked Separation as a Consequence of Ecological Factors

A final factor isolating Sonoran Desert Area bald eagles is the unsuitability of habitat in areas surrounding the Sonoran Desert Area for occupancy by breeding birds. The majority of the bald eagle population in the Sonoran Desert Area occurs in central Arizona within the riparian areas of the Sonoran Desert as described in Brown (1994, pp. 180–221) and adjacent vegetation communities. Across the western United States, there are large geographic areas where breeding bald eagles are rarely found. These areas are associated with the Great Basin and Mohave Deserts, indicating that conditions in these desert biotic communities are not suitable for occupancy. In contrast, the Sonoran Desert and its subdivisions, where nesting bald eagles within the Sonoran Desert Area are located, are suitable for breeding areas because of the availability of water, prey, and trees suitable for nesting and perching. The Sonoran Desert scrub vegetation community is unique from other desert scrub formations in North America in its tropical and subtropical influences. Within the community, the riparian or riverine habitat occupied by breeding bald eagles is limited to areas where there is sufficient winter precipitation to support vegetation along streams (Brown 1994, p. 269).

Western Apache traditional ecological knowledge corroborates these data regarding bald eagles within the Sonoran Desert Area being ecologically separated from other populations. Three Apache place names use the term Itsa Bigow ("bald eagle's home"). Apaches use the term gowa (meaning "home") referring to the eagle's entire habitat, as opposed to the term bit'oh ("its nest"). According to Basso (1996), the Western Apaches' perception of the land works in specific ways to influence Apaches' awareness of themselves. The process of "place naming" documents where and how Apaches learned about the environment and how they incorporated these names into social and environmental ethics (Basso 1996). This concept is further exemplified by the Apache word "ni", this expression translates to mean both "mind" and "land," and thus, the two words cannot be separated (Chairman Ronnie Lupe, pers. comm., 2008). The Apache bald eagle place names evoke an entire area or ecosystem of which the bald eagle is an intrinsic part. The place names include entire mountainsides composed of chaparral, pinyon-juniper woodland, and ponderosa pine forests, always in proximity to water (*i.e.,* riparian areas) (Lupe *et al.* pers. comm. 2008).

Bald eagles, including those in the Sonoran Desert Area, typically nest within 1 mi (1.6 km) of water. Bald eagles require cliff ledges, rock pinnacles or large trees or snags in which to construct nests (Driscoll *et al.* 2006, pp. 19–20). Those areas most immediately surrounding the Sonoran Desert Area, which contain no known breeding eagles or suitable habitat, fall within the Great Basin and Mohave Deserts. Areas in the Great Basin and Mohave Deserts surrounding the Sonoran Desert Area lack the appropriate bald eagle habitat parameters of water, fish, and nesting areas. Nonbreeding bald eagles from other populations migrate through these areas to reach the Sonoran Desert Area. Therefore, we believe these desert areas result in a discontinuity of distribution of breeding birds, rather than as a barrier to dispersal, and serve to further

isolate Sonoran Desert Area bald eagles from those in other populations.

Bald eagles nesting at high elevation in Arizona in areas in proximity to the Sonoran Desert Area occupy Petran Montane Conifer Forest and Plains, and Great Basin Grassland above the Mogollon Rim (Brown and Lowe 1994, map). These eagles are not believed to have originated from within the Sonoran Desert Area, as described above. Similarly, bald eagles occupying these areas are not known to have occupied Sonoran Desert habitat within the Sonoran Desert Area. These high-elevation areas appear to be unsuitable to Sonoran Desert Area bald eagles, as indicated by the lack of emigration to these areas by eagles originating in the Sonoran Desert Area.

Conclusion on Discreteness

Based on the available information in the petition, scientific literature, traditional ecological knowledge, and information in our files regarding bald eagles in the Sonoran Desert Area, we have determined that the Sonoran Desert Area population of bald eagles is markedly separate from other populations of the species due to a lack of immigration to and emigration from surrounding bald eagle populations, and the fact that the areas immediately surrounding the Sonoran Desert Area lack the appropriate bald eagle habitat parameters of water, fish, and nesting areas and contain no known breeding bald eagles. Therefore, we have determined that the Sonoran Desert Area population meets the requirements of our DPS Policy for discreteness. Banding studies and resighting efforts demonstrate that breeding bald eagles in the Sonoran Desert Area are largely geographically separate from those in surrounding areas. Limited source populations and unsuitable habitat in surrounding areas further separate bald eagles in the Sonoran Desert Area from those in other areas. Although not absolute, we believe this separation to be marked, and to meet the intent of the DPS Policy for discreteness. We made a similar argument and drew the same conclusion for similar reasons in our final delisting rule for the species in the lower 48 States (72 FR 37246, July 9, 2007).

Significance

If we determine that a population segment is discrete under one or more of the discreteness conditions described in the DPS Policy, we then evaluate its biological and ecological significance based on "the available scientific evidence of the discrete population segment's importance to the taxon to which it belongs" (61 FR 4725). We make this evaluation in light of congressional guidance that the Service's authority to list DPSs be used "sparingly" while encouraging the conservation of genetic diversity (61 FR 4722; February 7, 1996). Since precise circumstances are likely to vary considerably from case to case, the DPS Policy does not describe all the classes of information that might be used in determining the biological and ecological importance of a discrete population. However, the DPS Policy describes four possible classes of information that provide evidence of a population segment's biological and ecological importance to the taxon to which it belongs. As specified in the DPS Policy (61 FR 4722), consideration of the population segment's significance may include, but is not limited to the following: (1) Persistence of the population segment in an ecological setting that is unusual or unique for the taxon; (2) evidence that loss of the population segment would result in a significant gap in the range of the taxon; (3) evidence that the population segment represents the only surviving natural occurrence of a taxon that may be more abundant elsewhere as an introduced population outside of its historic range; and (4) evidence that the discrete population segment differs markedly from other populations of the species in its genetic characteristics.

Evidence with respect to any one of the classes of information listed in the DPS Policy may allow the Service to conclude that a population segment is significant to the taxon to which it belongs. Furthermore, the Service may consider other information relevant to the question of significance, as appropriate.

Persistence in a Unique Ecological Setting

As stated in the DPS Policy, the Service believes that occurrence in an unusual ecological setting may be an indication that a population segment represents a significant resource warranting conservation under the Act (61 FR 4724). In considering whether the population occupies an ecological setting that is unusual or unique for the taxon, we evaluate whether the habitat includes unique features not used by the taxon elsewhere and whether the habitat shares many features common to the habitats of other populations. The bald eagle: (1) Is continent wide in its distribution (stretching from the Aleutian Islands to Baja California, Mexico, and from northeastern Canada to Florida), (2) breeds from sea level to mountains as high as 10,000 feet, (3) lives in some of the driest areas in the United States and in some of the wettest, and (4) is capable of nesting in trees, on cliff faces, on the ground, and even in caves. In other words, the species is able to occupy a broad range of vegetation communities and ecosystems throughout North America. Because the bald eagle occurs in so many diverse environments, it is difficult to determine what the "usual" ecological setting is for the species, and, therefore, difficult to conclude that the bird's presence in any particular ecological setting is "unusual," possibly indicating significance under our DPS policy.

Bald eagles in the Sonoran Desert Area inhabit a desert ecosystem characterized by hot and dry summers. On its face, this seems to represent an ecological setting that is highly unusual or unique for the species. For instance, according to Hunt *et al.* (1992, p. A163) and Glinski (1998, p. 52) bald eagle nesting habitats in Arizona are among the most unusual nesting habitats occupied by the species, with many of the nests located in open desert under conditions of high heat and low humidity. As a highly adaptable species, however, bald eagles are flexible with respect to habitat selection. They inhabit many diverse environments. They inhabit hot climates elsewhere, such as in Florida. They even inhabit other desert ecosystems in Baja California Sur (Henney *et al.* 1978, 1993). Bald eagle breeding in Baja is limited, but nest sites are known from both the Pacific Ocean and Gulf of California sides of the peninsula, in arid and semi-arid ecosystems of the Sonoran Desert (Henney *et al.* 1978, 1993). Bald eagles in desert habitats, including the potential Sonoran Desert Area DPS, essentially use the same ecological niche as those in other parts of their range. Bald eagles in the Sonoran Desert Area feed primarily on fish, consistent with bald eagles in other parts of the range. With respect to nesting requirements, according to Grier and Guinn (2003, p. 44), habitat structure and proximity to a sufficient food source are usually the primary factors that determine suitability of an area for nesting. Throughout their range, bald eagles are known to nest primarily along seacoasts and lakeshores, as well as along banks of rivers and streams (Stahlmaster 1987, p. 120). Similar to the remainder of the population, bald eagle breeding areas (eagle nesting sites and the area where eagles forage) in the Sonoran Desert Area are located in close proximity to a variety of aquatic sites, including reservoirs, regulated river

systems, and free-flowing rivers and creeks.

Although the Sonoran Desert differs in some ways from other habitats that the bald eagle inhabits, every area differs somewhat from other occupied areas. Under the DPS Policy, for a population segment to qualify as a DPS it must be significant to the species to which it belongs. The Policy further lists four issues that the Service may consider in making this determination. Those considerations include whether the population segment persists in a unique or unusual ecological setting. However, the question of ecological setting is not considered in the abstract, or itself determinative as to whether a population segment is significant. As with the other considerations under the significance prong of the DPS Policy, it must be considered in the context of the population segment's importance to the taxon to which it belongs. Thus, to the extent that a population segment arguably persists in an unusual ecological setting, the Service must consider how persistence in this setting may in fact be important to the taxon. Failure to consider this context would lead to the conclusion that an unreasonable and potentially infinite number of population segments are significant. However, our DPS Policy states that the requirement that a DPS be significant is intended to carry out the expressed congressional intent that this authority be exercised sparingly as well as to concentrate conservation efforts undertaken under the Act on avoiding important losses of genetic diversity. We conclude that the best information available does not indicate that persistence in the ecosystem of the Sonoran Desert Area is important to the species as a whole.

We considered whether cliff nesting is an adaptation to the conditions in the Sonoran Desert Area that indicates that the southwest is an unusual or unique ecological setting for bald eagles. While Stahlmaster (1987, p. 121) noted that cliff nesting is common in Arizona, he also noted that exceptions to tree nests occur in other areas. Gerrard and Bortolotti (1988, p. 41) note that bald eagles in other areas may nest on cliffs if suitable trees are not available. This is supported by Buehler (2000) who states that bald eagles use ground nests (a category in which he includes nests built on cliff sides) in treeless regions such as Alaska, north Canada, islands off the coast of California, and Arizona. Bald eagles are known to nest on cliffs on the Channel Islands off California (NOAA 2006). Bald eagles in Alaska also are known to nest on cliffs, sea stacks, hillsides, and rock promontories where there are no suitable nest trees (Sherrod *et al.* 1976, p. 153). It is likely that up to 10 percent of the bald eagles in Alaska nest on the ground (Schempf pers. comm. 2007). Ground nesting has been documented in northwestern Minnesota and Florida but is the exception rather than the rule (Hines and Lipke 1991, pp. 155–157; Shea *et al.* 1979, pp. 3–5). Eagles also nest in a variety of unconventional situations, such as utility poles, abandoned heavy equipment, mangroves, cacti (in Baja), and root wads washed up on sandbars.

Cliff nesting in Sonoran Desert Area bald eagles does not seem to be an indication of a behavioral adaptation unique to the Sonoran Desert. Bald eagles will use whatever high nest sites are available near aquatic areas they inhabit; in the Sonoran Desert Area these sites often happen to be cliffs. In fact, although bald eagles use cliffs, ledges, and pinnacles for nesting in the Sonoran Desert Area, they have also nested there in cottonwood, willow, sycamore, pinyon pine, and ponderosa pine trees. Many Sonoran Desert Area eagle pairs have built and used both tree and cliff nests within their territories. This behavior demonstrates the flexibility in nest site selection that bald eagles have throughout the eagles' entire geographic range.

Bald eagles in the Sonoran Desert Area are smaller in size than many other bald eagles. However, as previously discussed, examination by latitude reveals differences between birds in the northern regions and birds in the southern regions in general. For instance, Stahlmaster (1987, pp. 16–17) notes northern eagles are much larger and heavier than their southern counterparts. This is consistent with Bergmann's Rule, which holds that animal size increases with increasing latitude due to changes in environmental temperature. Consistent with this rule, Hunt *et al.* (1992, pp. A158–A161) report that bald eagles in Arizona are smaller than those in Alaska, California, and the Greater Yellowstone Region. Gerrard and Bortolotti (1988, p. 14) note that bald eagles in Florida, which is farther south than Arizona, are the smallest, with a gradation of small to large from south to north. Although this information might be interpreted as suggesting that all southern birds are significant to the taxon as a whole (since southern birds are smaller), it does not suggest that small size of the Sonoran Desert Area bald eagle in particular is important to the taxon as a whole. This is especially true given that Florida has one of the largest breeding populations of bald eagles in the lower 48 States, and bald eagles in Florida are reported to be even smaller than those in the Sonoran Desert Area. This information suggests that there are many bald eagles outside the Sonoran Desert Area that are smaller than those within it, diminishing any potential importance of small size in the Sonoran Desert Area to the taxon as a whole.

We considered the belief of Hunt *et al.* (1992, p. A165) that the smaller size of Arizona bald eagles was significant enough that the introduction of foreign genes into the population might disrupt coadapted gene complexes (a group of genetic traits which have high fitness when they occur together, but which without each other have low fitness) specific to the population. Given there are smaller birds elsewhere in the bald eagle's range, it is unlikely small size would be considered an indicator of coadapted gene complexes specific to bald eagles within the Sonoran Desert Area. We conclude that the best available information does not suggest the Sonoran Desert Area bald eagle population possesses coadapted gene complexes specific to the population. Thus, we conclude that the best available information does not suggest the Sonoran Desert Area bald eagles are important to the taxon as a whole due to coadapted gene complexes.

Bald eagles in the Sonoran Desert Area breed earlier than many other bald eagles, which could indicate adaptation to the Sonoran Desert Area setting. However, as with bald eagle size variation, examination by latitude reveals differences between bald eagles in northern and bald eagles in southern regions, in general. Timing of various breeding events in bald eagles is tied to latitude of the nesting area, with eagles at more northern latitudes breeding at later dates (Stalmaster 1987, p. 63). Citing unpublished data, Watts *et al.* (2007) even note differences in breeding chronology with slight variation of latitude within the Chesapeake Bay region; pairs on the James River lay eggs four to six days earlier than pairs on the Potomac River. The breeding chronology of Florida birds is even earlier than those in the Sonoran Desert Area. Gerrard and Bortolotti (1988, p. 76) note that bald eagles in Florida lay eggs from early November to mid-December. Henry *et al.* (1993 p.208) report that Baja California bald eagles are already incubating by mid January, which indicates a mid-December to early-January egg laying period. In Louisiana, bald eagles lay eggs between October and mid-March, but most clutches are complete by late December (Service 1989). Even bald eagles within the Chesapeake Bay region of Virginia

and Maryland, which experience a more mild (*i.e.* coastal) climate than their inland counterparts at similar latitude, are similar in their breeding chronology to those of the Sonoran Desert Area; bald eagles in the Chesapeake Bay region typically lay eggs between mid-January and late February. Further evidence of variation in breeding chronology in bald eagles is given by Buehler (2000):

> Timing of laying varies with latitude. Bent (1937) reported range of egg dates (dates eggs were collected from nests) but because incubation is long (35 d), and eggs persist in abandoned nests, these data do not accurately document laying and incubation phenology. In Florida, breeding season is prolonged, with incubation beginning as early as Oct and as late as Apr; Apr breeding may be second attempt; most incubation initiated Dec–Jan (Broley 1947). On Chesapeake Bay, begin incubation last week in Jan to end of Feb (DAB). In Saskatchewan, laying is fairly synchronous, with 90% of pairs laying within a 10-d period in mid-Apr (Gerrard and Bortolotti 1988). In greater Yellowstone ecosystem, WY, clutch laid from early Mar–mid-Apr; later dates at greater elevations (Swenson et al. 1986). Eggs typically laid in Arizona late Jan–mid-Feb (Grubb 1983). Nests observed in Mexico had incubating adults in Jan; therefore, laying may have occurred from late Dec to early Jan (Henny et al. 1993). In Alaska and Yukon Territory, laying extends from late Apr to end of May, peaking in second week of May (Hensel and Troyer 1964, Blood and Anweiler 1990).

Given that early breeding by bald eagles in the Sonoran Desert Area is not unique among eagles, and in fact occurs in some of the largest breeding areas in the lower 48 States, it is unlikely that early breeding by bald eagles in the Sonoran Desert Area is important to the species as a whole.

Although the best available information indicates that the Sonoran Desert Area is in some ways a unique ecological setting, we know of no information suggesting bald eagle persistence in the Sonoran Desert Area is important to the species as a whole. In fact, the best information available indicates otherwise. Bald eagles are behaviorally flexible—they can and do persist in a broad range of ecological settings, and are known to nest on a variety of substrates when suitable trees are not available. As with many other vertebrates, bald eagles follow Bergmann's rule; their size decreases with decreasing latitude. In addition, Sonoran Desert Area bald eagle breeding chronology is consistent with bald eagles in general; bald eagle breeding chronology occurs earlier with decreasing latitude and increasing temperature. Rather than possessing characteristics unique to the Sonoran Desert Area ecological setting that may be important to the species as a whole, bald eagles in the Sonoran Desert Area display the behavioral variability and follow the morphological and annual cycle (such as breeding chronology) trends of bald eagles throughout North America. In other words, the variability in bald eagle nest-site selection, timing of breeding, and size differences are noted elsewhere in the range where the species confronts similar limitations, such as the absence of nesting trees or high temperatures. Even though bald eagles persist in the Southwest desert setting, they remain consistently associated with aquatic sites, including reservoirs, regulated river systems, and free-flowing rivers and creeks. Bald eagles use whatever high nest sites are available near aquatic areas they inhabit in the Sonoran Desert Area; these sites often happen to be cliffs. These aquatic areas are common to eagle habitats throughout the species' range, and the best available data indicate that the nesting preferences of the Sonoran Desert Area eagles are not unique to the taxon as a whole.

We also considered whether the juvenile migration characteristics of Arizona bald eagles may suggest genetic adaptation. Hunt *et al.* (2009, p. 125) indicates that juvenile bald eagles from Arizona exhibit similar migrating characteristics, and that the similarity of these characteristics, which were exhibited while migrating solitarily, is evidence of genetic control of migration. Bald eagles as a species exhibit a "complex pattern of migration dependent on age of the individual (immature or adult), location of breeding site (north vs. south, interior vs. coastal), severity of climate at breeding site (especially during winter but also possibly during summer), and year-round food availability (Buehler 2000)." For example, bald eagles in northeastern North America migrate south in the fall and return north in the spring, whereas bald eagles in Florida move north in late spring and early summer and return south in the fall (Kerlinger 1989, p. 12). Kerlinger (1989, p. 57) discusses that natural selection has likely shaped the migratory strategy of birds. Natural selection likely exerts pressure over time to emphasize the survival of successful migration strategies, and therefore, successful genes. In other words, birds that make errors in migration are eliminated from the population and do not go on to reproduce and pass their genes to the next generation. Thus, the birds that do survive migration and reproduce successfully may become more genetically similar. Thus, the migration characteristics of bald eagles in the Sonoran Desert Area could be interpreted as providing anecdotal evidence that there may be some genetic adaptation in this population with respect to juvenile migratory behaviors; however, we know of no information suggesting that these potential adaptations are significant to the species as a whole, especially in light of the fact that a wide variety of migration strategies are utilized throughout the range of the species.

Some members of the public questioned the future of the bald eagle given the possibilities associated with climate change. All but one model evaluating changing climatic patterns for the southwestern United States and northern Mexico predict a drying trend for the region (Seagar *et al.* 2007, pp. 1181–1184). We acknowledge that drought and the loss of surface water in riparian and aquatic communities are related to changing climatic conditions (Seagar *et al.* 2007, pp. 1181—1184). The extent to which changing climate patterns will affect bald eagles in the Sonoran Desert Area is not known. However, because bald eagles are highly adaptable, the best available information indicates it is unlikely the Sonoran Desert Area population adds resiliency to the taxon as a whole. For this reason, it is also unlikely that the Sonoran Desert Area bald eagles will be significant to the species as a whole if the southwest becomes more arid in the future as predicted.

Many biological opinions prepared by the Service in connection with section 7 consultations in the Sonoran Desert and other Service documents issued over the last 30 years stated that Arizona bald eagles live in a unique ecological setting and demonstrate unique behavioral characteristics, including the use of cliffs instead of trees as nest sites, breeding at earlier times of the year, and development of smaller body sizes. Several comment letters, including those from bald eagle experts, referred to the Service's previous management practice of recognizing the bald eagles in a Southwest Recovery Region separate unit. As stated above and in the final delisting rule (72 FR 37355), that was prior to the DPS policy of 1996, and we conclude that the DPS evaluation of significance should be evaluated per the policy, as described in this document. Some of these documents also stated that the Arizona bald eagles had been considered a distinct population for the purposes of section 7 consultation and recovery efforts under the Act. Many of these biological opinions and other documents were issued prior to the

Stahlmaster (1987) and Gerrard and Bortolotti (1988) publications, the issuance of the DPS Policy in 1996, or were abstracted from such earlier biological opinions without a reanalysis of their relevance. The term "unique ecological setting" was not used in these documents in the context of its meaning within the DPS Policy, which requires that the unique or unusual ecological setting be important to the conservation of the taxon as a whole. As discussed above, while the climate conditions differ in the Southwest compared to other parts of the range of the taxon where bald eagles are found, this attribute alone is not dispositive as to whether a population segment is significant under the DPS Policy. A unique or unusual ecological setting must also provide some element that makes the members of the population important to the taxon as a whole (61 FR 4724–4725).

In summary, Stahlmaster's (1987, p. 121) and Gerrard and Bortolotti's (1988, p. 41) studies indicate that bald eagles in other parts of their range are known to nest on cliffs if suitable trees are not available. Hunt *et al.* (1992) note that Florida bald eagles are the smallest bald eagles, and that eagle size increases as the nest sites are located farther north. Stalmaster (1987) notes that bald eagles in Florida initiate breeding activities in October, even earlier than Sonoran Desert Area bald eagles. The best available scientific information indicates that the Sonoran Desert Area bald eagles are not unusual in these behavioral aspects. Instead, bald eagle behavior and morphology gradually changes at different latitudes from north to south. In fact, even though bald eagles do persist in the Southwest desert setting, they remain consistently associated with aquatic ecosystems as they do elsewhere. Bald eagles use whatever high nest sites are available near riparian areas they inhabit in the Sonoran Desert Area; these sites often happen to be cliffs. These riparian areas are common to eagle habitats throughout the species' range. The question under the DPS Policy is whether persistence of a species in an unusual or unique ecological setting supports a conclusion that the discrete population segment is significant to the taxon to which it belongs. *See National Association of Home Builders* v. *Norton,* 340 F.3d 835, 849 (9th Cir. 2003) (emphasizing that under the DPS Policy significance must be considered in relation to the taxon as a whole). The mere fact that a species persists in an ecological setting that differs to some degree from other ecological settings in which it is found does not mandate a finding that a population is significant to the taxon to which it belongs. Here, we find that the species' persistence in the Sonoran Desert Area is not significant to the taxon as a whole because these particular eagles exhibit similar behavior and nesting adaptations to their setting as do bald eagles in other settings.

Therefore, we conclude that the discrete population of bald eagles in the Sonoran Desert Area is not "significant" within the meaning of the DPS Policy as a result of persistence in a unique or unusual ecological setting.

Significant Gap in the Taxon's Range

As stated in the DPS Policy, the Service believes that evidence that loss of the discrete population segment would result in a significant gap in the range of a taxon, is potentially an indication that a population segment represents a significant resource warranting conservation under the Act (61 FR 4724). As the Ninth Circuit has stated, "[t]he plain language of the second significance factor does not limit how a gap could be important," *National Ass'n of Home Builders* v. *Norton,* 340 F.3d 835, 846 (9th Cir. 2003). Thus, we considered a variety of ways in which the loss of the Sonoran Desert Area population might result in a significant gap in the range of the bald eagle in the lower 48 States (although this range is itself only a portion of the broader taxon. There has been much speculation about the loss of eagles in the Sonoran Desert Area given that repopulation of this area would have to occur from northern Mexico or adjacent States in the United States and available evidence indicates that little immigration has occurred in this population. We agree that the low number of eagles in neighboring States of the United States would likely require a large amount of time to repopulate the Sonoran Desert Area, if they ever did. The small number of bald eagles and large distances between neighboring populations currently limit immigration and emigration between them, and bald eagles in the neighboring populations would have to increase their population size and expand their distribution to occupy the gaps.

Given that repopulation of the Sonoran Desert Area, if extirpated, through immigration is unlikely in the foreseeable future due to unsuitable habitat and limited population sources, we must evaluate whether loss of this population would create a significant gap in the range of the taxon. Bald eagles in the Sonoran Desert Area are neither numerous nor constitute a significant percentage of the bald eagles throughout the range of the taxon. In 2009, 48 pairs were documented in the Arizona portion of the Sonoran Desert Area (McCarty and Jacobson 2009, p. 8), which is where most of the birds in the Sonoran Desert Area population occur. This represents less than one half of 1 percent of the current estimated number of breeding pairs of bald eagles in the lower 48 States. Because the taxon as a whole also includes bald eagles in Canada and Alaska, the number of breeding pairs in the Sonoran Desert Area represents much less than one half of a percent of the number of breeding pairs throughout the range of the species. In addition, the Arizona portion of the Sonoran Desert Area did not support a large proportion of the bald eagle population historically. A small number, estimated at 15–20 breeding pairs, historically bred in this area (Tilt 1976, p. 15). Only one pair was documented in the Mexico portion of the Sonoran Desert Area population, but surveys were very limited.

Given the historical and current population number of bald eagles throughout the range of the taxon, the Sonoran Desert Area population of bald eagles represents a relatively small number of breeding pairs in comparison. On balance, having reviewed all the relevant information, we conclude that loss of eagles in the Sonoran Desert Area would not represent a significant gap in the range of the species due to a loss of biologically distinctive traits or adaptations, or genetic variability of the taxon. The actual amount of suitable bald eagle habitat in the Sonoran Desert Area is in general limited and represents a minute fraction of the total suitable habitat available for bald eagles throughout their range. The limited size of the current and historical bald eagle population in the Sonoran Desert Area directly reflects that fact. Thus, we conclude that loss of the Sonoran Desert Area would not result in a significant gap in the range of the taxon.

As discussed previously in this document, we divided the lower 48 States into five recovery regions to facilitate the recovery of the bald eagle. In the southwestern United States bald eagles were managed under the Southwest Bald Eagle Recovery Region, which encompassed Oklahoma, Texas west of the 100th meridian, all of New Mexico and Arizona, and those portions of southeastern California that border the lower Colorado River. Several comment letters, including those from bald eagle experts, referred to our previous management practice of recognizing the bald eagles in a

Southwest Recovery Region separate unit. As has been stated here and in the final delisting rule (72 FR 37355), we delineated bald eagle Recovery Regions prior to the DPS Policy of 1996. Thus, the boundaries of these units were not delineated based on the significance criteria of our DPS policy. These boundaries, therefore, may have little baring on an analysis of whether the loss of the Sonoran Desert Area population would result in a significant gap in the range of bald eagles in North America. We conclude that the DPS evaluation of significance should be evaluated per the policy, rather than evaluated per pre-DPS-Policy documents.

Natural Occurrence of a Taxon Abundant Elsewhere as an Introduced Population

As stated in the DPS Policy, the Service believes that evidence that the population segment represents the only surviving natural occurrence of a taxon that may be more abundant elsewhere as an introduced population outside of its historic range may be an indication that a population segment represents a significant resource warranting conservation under the Act (61 FR 4724). However, the Sonoran Desert Area population does not represent the only surviving natural occurrence of the bald eagle throughout the range of the taxon in North America.

Genetic Characteristics

As stated in the DPS Policy, the Service believes that evidence that the discrete population segment differs markedly from other populations of the species in its genetic characteristics may be an indication that a population segment represents a significant resource warranting conservation under the Act (61 FR 4724). Hunt *et al.* (1992, pp. E–96 to E–110) contains the genetic work completed to date on the Arizona bald eagle population. Hunt *et al.* (1992, pp. A150–A165) suggested that the desert Arizona population, which includes the majority of bald eagles in the Sonoran Desert Area, may be reproductively isolated. Vyse (1992, p. E–100, E–101) notes that the results obtained could easily be explained by sampling procedures, and Zegers *et al.* (1992, pp. E–106 to E–109) question the reliability of the results because of the low numbers of individuals sampled from most States and because of the few loci examined. In conclusion, neither enzyme electrophoresis nor DNA fingerprinting resolved any specific genetic markers with which Arizona eagles could be differentiated from other populations.

The available genetic studies on bald eagles are dated; the sample size was small; and researchers conducting the studies found the results to be inconclusive. As discussed above, eagles in the Sonoran Desert Area do not display any biologically distinctive traits that likely signal any unique genetic characteristics. Therefore, given the assumptions and cautions in using the data, we have determined that the best available data do not support a conclusion that bald eagles in the Sonoran Desert Area have genetic characteristics that are markedly different from other bald eagles.

DPS Conclusion

On the basis of the best available information, we conclude that the Sonoran Desert Area population of the bald eagle is discrete, but it is not significant in relation to the remainder of the taxon (*i.e.,* bald eagles in North America). We believe the best scientific information provides substantial information on natal site fidelity in breeding birds and the limited number of other eagles in neighboring southwestern States. Further, we believe the results of the 30 years of monitoring data provide substantial information indicating that few, if any, eagles immigrate to or emigrate from the Sonoran Desert Area bald eagle population. These three factors lead us to conclude that the best available scientific information with respect to the discreteness requirements of the DPS Policy warrant considering the Sonoran Desert Area bald eagle population as discrete from other bald eagle populations in North America.

Although they do persist in a arid region with high heat, as discussed above, Sonoran Desert Area bald eagles do not appear to express any adaptations that are not found in bald eagles elsewhere or that a population persisting in the Sonoran Desert Area will significantly increase the resiliency of the taxon as a whole. The adaptability of the bald eagle allows its distribution to be widespread throughout the North American continent in a variety of habitat types. We considered the four classes of information listed in the DPS Policy as possible considerations in making a determination as to significance; we also considered all other information that might be relevant to making this determination for the Sonoran Desert Area population. We conclude that the discrete Sonoran Desert Area population of bald eagle does not meet the significance criteria of the DPS Policy, as detailed above, and, therefore, is not a DPS pursuant to our DPS Policy. As a result, the Sonoran Desert Area population of bald eagles is not a listable entity under section 3(16) of the Act.

Since we found that the population segment did not meet the significance element and, therefore, does not qualify as a DPS under the Service's DPS Policy, we will not proceed with an evaluation of the status of the population segment under the Act.

We note that, although we have determined that this portion of the range is not significant for the purposes of section 4 of the Act, we recognize that the bald eagles in the Sonoran Desert Area have great importance to people in this region, particularly Native Americans, and will continue to be protected under the BGEPA. We will continue to work with the States, Tribes, and conservation organizations in this region to conserve the bald eagle in the Sonoran Desert Area.

Finding

In making this finding, we considered information provided by the petitioners, as well as other information in our files, and otherwise available. We reviewed the petition, information submitted by the public and the Tribes, and available published and unpublished scientific and commercial information. We also consulted with Federal, State, and Tribal land managers, along with recognized experts in conservation and bald eagle biology. This 12-month finding reflects and incorporates information that we received from the public and through consultation, literature research, and field visits. Based on the rationale detailed above, we find that bald eagles in the Sonoran Desert Area constitute a discrete population segment.

However, on the basis of our review, we find that the best scientific and commercial information does not indicate that the Sonoran Desert Area bald eagle constitutes a valid DPS, pursuant to the DPS Policy (61 FR 4722). As described above, we believe the population to be discrete, but have determined that the Sonoran Desert Area bald eagle is not significant in relation to the remainder of the taxon (*i.e.* bald eagles in North America). Therefore, we conclude that the Sonoran Desert Area population is not a listable entity pursuant to section 3(15) of the Act. Finally, we find that the Sonoran Desert Area portion of the range of the bald eagle in North America does not constitute a significant portion of the species' range as this portion does not contribute meaningfully to the representation, resiliency, or redundancy of the entire taxon.

We encourage interested parties to continue to gather data that will assist with the conservation of the species. If you wish to provide information regarding the bald eagle, you may submit your information or materials to the Field Supervisor, Arizona Ecological Services Office (*see* **ADDRESSES** section above). The Service continues to strongly support the cooperative conservation of the Sonoran Desert Area bald eagle.

On March 6, 2008, the U.S. District Court for the District of Arizona enjoined our application of the July 9, 2007 (72 FR 37346), final delisting rule for bald eagles to the Sonoran Desert population pending the outcome of our status review and 12-month petition finding. As a result, we put this population back on the List of Threatened and Endangered Species on May 1, 2008. In light of our 12-month finding presented above, we intend to publish a separate notice to remove this population from the List of Threatened and Endangered Wildlife. However, we will only do so once the U.S. District Court for the District of Arizona has confirmed that its injunction, which required us to add this population to the List of Threatened and Endangered Wildlife, has been dissolved. Until that time, the Sonoran Desert Area population will remain protected by the Act.

References Cited

A complete list of all references cited herein is available, upon request, from the Arizona Ecological Services Office of the U.S. Fish and Wildlife Service (*see* **ADDRESSES** section above).

Author

The primary authors of this notice are the staff of the Arizona Ecological Services Office (*see* **ADDRESSES**).

Authority

The authority for this action is the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*).

Dated: February 17, 2010.

Hannibal Bolton,

Acting Director, Fish and Wildlife Service.

[FR Doc. 2010–3794 Filed 2–24–10; 8:45 am]

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DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

[Docket No. FWS–R1–ES–2008–0128]
[MO 92210–0–0009–B4]

RIN 1018–AW72

Endangered and Threatened Wildlife and Plants; Withdrawal of Proposed Rule To List the Southwestern Washington/Columbia River Distinct Population Segment of Coastal Cutthroat Trout (*Oncorhynchus clarki clarki*) as Threatened

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Proposed rule; withdrawal.

SUMMARY: We, the U.S. Fish and Wildlife Service (Service), have determined that the proposed listing of the Southwestern Washington/Columbia River Distinct Population Segment (DPS) of coastal cutthroat trout as a threatened species under the Endangered Species Act of 1973, as amended (Act), is not warranted. We therefore withdraw our proposed rule (64 FR 16397; April 5, 1999) to list the DPS under the Act. Although we had earlier concluded that this DPS did not warrant listing under the Act, as a result of litigation we have reconsidered whether the marine and estuarine areas of the DPS may warrant listing if they constitute a significant portion of the range of the DPS. Based upon a thorough review of the best available scientific and commercial data, we have determined that the threats to coastal cutthroat trout in the marine and estuarine areas of its range within the DPS, as analyzed under the five listing factors described in section 4(a)(1) of the Act, are not likely to endanger the species now or in the foreseeable future throughout this portion of its range. We, therefore, again withdraw our proposed rule, as we have determined that the coastal cutthroat trout is not likely to become endangered now or in the foreseeable future throughout all or a significant portion of its range within the Southwestern Washington/Columbia River DPS.

ADDRESSES: This withdrawal and supporting documentation are available on the Internet at *http://www.regulations.gov;* search for Docket Number [FWS–R1–ES–2008–0128]. Supporting documentation for this determination is also available for inspection, by appointment, during normal business hours at the U.S. Fish and Wildlife Service, Oregon Fish and Wildlife Office, 2600 SE. 98th Avenue, Suite 100, Portland, OR 97266; telephone 503–231–6179; facsimile 503–231–6195.

FOR FURTHER INFORMATION CONTACT: Paul Henson, Ph.D., State Supervisor, U.S. Fish and Wildlife Service, Oregon Fish and Wildlife Office (*see* **ADDRESSES**, above). Persons who use a telecommunications device for the deaf (TDD) may call the Federal Information Relay Service (FIRS) at 800–877–8339.

SUPPLEMENTARY INFORMATION:

Background

On July 5, 2002, we published a notice of our withdrawal of the proposed rule to list the Southwestern Washington/Columbia River distinct population segment (DPS) of the coastal cutthroat trout (*Oncorhynchus clarki clarki*) as threatened under the Endangered Species Act of 1973, as amended (Act) (67 FR 44934; July 5, 2002). As a result of litigation, we are required to reconsider our withdrawal of the proposed rule with specific regard to the question of whether marine and estuarine areas may constitute a significant portion of the range of the Southwestern Washington/Columbia River DPS of coastal cutthroat trout.

On March 24, 2009, we published a notice of reopening of a comment period on the proposed rule (74 FR 12297). In that notice, we alerted the public, other concerned governmental agencies, the scientific community, industry, and any other interested party of our request for information, data, or comments on the marine and estuarine areas of the Southwestern Washington/Columbia River DPS of coastal cutthroat trout, with particular regard to whether these areas constitute a significant portion of the range of the DPS under the Act, and if so, whether the subspecies is threatened or endangered in those areas.

The comment period closed on April 23, 2009, and we received four comment letters. After analyzing the information received, information in our files, and all other available information, we analyzed the threats to coastal cutthroat trout in the marine and estuarine portion of the DPS to determine whether coastal cutthroat trout are threatened or endangered in that area and, if so, whether the area constitutes a significant portion of the range of the DPS. Although the Court did not ask us to revisit status, trends, and threats to anadromous cutthroat trout or other life-history forms outside of marine and estuarine areas, we have also considered any new information available for these areas that would suggest any significant change in status, trend, or threats for the