7 July 2008

Public Comments and Processing
Attn: FWS-R2-ES-2008-0059
Division of Policy and Directives Management
U.S. Fish and Wildlife Service
4401 N Fairfax Drive, Suite 222
Arlington, VA 22203

RE: Initiation of Status Review for the Bald Eagle in the Sonoran Desert Area of Central Arizona and Northwestern Mexico

I am submitting the following comments on 7th of July, but may have additional input throughout July. They address two broad issues: significance of a discrete population of bald eagles in Arizona, and threats to this population.

SIGNIFICANCE OF THE SONORAN DESERT BALD EAGLE POPULATION

This special population of bald eagle resides essentially within the Sonoran Biogeographic Province of the American Southwest, a unique and distinguishable region recognized by ecologists as an area of distinct adaptations of both plant and animal life (Brown, DE and CH Lowe. 1982. Introduction. Pp. 8-16 in Biotic communities of the American Southwest – United States and Mexico (DE Brown, Ed.). Desert Plants, Volume 4 Numbers 1-4.)

The significance of this ecological setting should not be underestimated, as it was by the U.S. Fish & Wildlife Service (FWS) in the following statement: “As with all populations of bald eagles throughout the lower 48 States, suitable riparian habitat, or other comparable aquatic habitat, is an essential prerequisite to successful eagle reproduction in the desert Southwest. Riparian ecosystems occupied by nesting bald eagles in the Sonoran life zones of the desert Southwest, therefore, do not constitute a unique setting for the species. The persistence of the bald eagle in this setting likely represents an example of a species occupying the edge of its range of suitable habitats” (FWS Notice of 90 day petition finding; Aug 30, 2006).

This statement is so inaccurate and reflects such an ignorance of biogeographic factors that underpin the distribution of Southwestern fauna and flora that it does not deserve further rebuttal.

Dr. Grainger Hunt, who studied eagle populations in many areas throughout North America, concluded, “Among the most unusual nesting habitats occupied by the species are those in Arizona, where many of the nests, though near water, are in open desert under conditions of high heat and low humidity that are far from typical of Bald Eagle habitat” (Hunt, WG. 1998. Bald Eagle. Pp. 50-54 in The Raptors of Arizona (RL Glinski, Ed.). University of Arizona Press, Tucson).

The following are some factors that suggest the Sonoran bald eagle is significantly different from other bald eagles. These factors are not new to discussions on Arizona’s bald eagles, but they are worth relating
in the context of official comments since it seems they generally have been ignored in earlier status review documents. Why FWS has chosen not to review fully these issues remains a point of grave concern to me. The act of heavy-handed interference by FWS Washington office administrators toward Arizona field biologists that were reviewing biological issues still looms. At the risk of straying too far from ecologically based comments, I must say that protection of Arizona’s bald eagles was obviously more of a priority to the FWS of 30 years ago than it is to the current organization.

The following issues represent factors that indicate the Sonoran bald eagle “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” (quoted text from “Policy Regarding the Recognition of Distinct Vertebrate Population Segments (DPS) Under the Endangered Species Act” Feb 1996):

1) Ten radio-tagged juveniles that had fledged from Arizona nests in May headed in a generally northerly direction in June-July into the region spanned by the Pacific Northwest and Manitoba, Canada. The report on this research concluded, “On the basis of our data, the term “post-fledging dispersal” probably does not apply to the long-range movements of the Arizona juveniles. Instead, the relatively small angle subtended by the courses of the 10 migrants, the regularity of diel activities, the rather long distances covered over short periods, and the course fidelity of some over long distances all indicate a functional migration involving habitat destinations, most likely food-related. The fact that the eagles showed these characteristics while migrating alone is evidence for genetic control of a migratory adaptation” (Hunt WG, DE Driscoll, EW Bianchi and RE Jackman. 1992. Ecology of Bald Eagles in Arizona. Rept. to U.S. Bureau of Reclamation, Contract6-CS-30-04470. BioSystems Analysis, Inc., Santa Cruz, CA.).

2) In this same report by Hunt, et al. (1992) the egg shell characteristics of Arizona’s bald eagle population is discussed: “Recently, numerous, large “holes” were observed in some California bald eagle eggs with high DDE levels and excessive water loss. We observed such “holes” in four Arizona eggs, but densities of the holes were one or two orders of magnitude less than in the California eggs. The possible impact such “holes” may have on water loss from bald eagle eggs from an arid climate such as Arizona is unknown.”

3) A total of 539 fledglings in Arizona were banded with visual id bands from 1977 to 2004, and 884 observations of bands on breeding adult bald eagles in Arizona were made from 1991 to 2004. Of all breeding adults in Arizona from 1987 to 2005 whose natal origins were known, 97% (n=64) bred within 300 kms of their natal area, one adult breeding in Arizona originated from another state (southeast Texas), and one eagle that fledged from Arizona bred in Temecula, California (Driscoll, J.T., K.V. Jacobson, G.L. Beatty, J.S. Canaca, and J.G. Koldoszar. 2006. Conservation assessment and strategy for the bald eagle in Arizona. Nongame and Endangered Wildlife Program Technical Report 173. Arizona Game and Fish Department, Phoenix, Arizona).

4) In the entire arid west between the Rocky Mountains and the coastal range from eastern Washington south to Mexico, an area that includes the four deserts of North America (Great Basin, Mojave, Sonoran, and Chihuahuan), only the Sonoran desert region sustains breeding bald eagles (Fig 1. From FWS National Bald Eagle Management Guidelines, May 2007). Certainly the loss of the Sonoran population segment would result in a significant gap in the entire breeding range of the bald eagle. Likewise, the persistence of the Sonoran population segment in an ecological setting unusual or unique for the taxon could be essential for the species, especially in an era when concerns about global warming and aridity are paramount issues in conservation.

DPS policy states that quantitative measures of genetic discontinuity may provide evidence of a discrete population segment. Unfortunately, the genetic analysis that would conclusively demonstrate the significance of discreteness in Arizona’s bald eagles has never been performed. This seems quite incredible since over the past 15-20 years literally hundreds of bald eagles have been handled in Arizona and in adjoining areas that could afford genetic comparison.

Fig. 1. Bald Eagle breeding range in the West.
Hunt (1998) concluded that, "There are unresolved questions about whether Arizona Bald Eagles differ genetically from those elsewhere," based on his assessment using limited genetic analysis techniques available 20 years ago. One would think that a critical and sincere assessment of the discreteness issue would involve a thorough genetic review of the Sonoran bald eagle population.

Per FWS DPS policy, relating the significance of a DPS involves demonstrating some of the following: persistence of the discrete population segment in an ecological setting unusual or unique for the taxon, evidence that loss of the discrete population segment would result in a significant gap in the range of a taxon, evidence that the discrete population segment represents the only surviving natural occurrence of a taxon that may be more abundant elsewhere as an introduced population outside its historic range, or evidence that the discrete population segment differs markedly from other populations of the species in its genetic characteristics.

The factors presented above suggest that the Sonoran bald eagle population represents the persistence of the discrete population segment in an ecological setting unusual or unique for the taxon whose disappearance would result in a significant gap in the range of bald eagles. Also, the Sonoran population segment represents the only surviving natural occurrence of the bald eagle in an arid environment, which as a taxon is very much more abundant elsewhere in its range under more temperate and humid conditions.

Presently, interpretations of the evolutionary importance of the Sonoran bald eagle may vary without the hard genetic data to bring the matter to conclusion. As mentioned above, Sonoran bald eagles may possess adaptations for bald eagles surviving in warm and arid environs, which would be an evolutionary advantage in the presence of global warming. I believe the factors presented above offer enough information to satisfy the standards established in FWS policy to generate a valid DPS. Any action that errs in favor of this population perhaps ultimately benefits a more expansive range of the species.

Some concluding thoughts about the discrete population issue: In an earlier correspondence to FWS regarding delisting the Southwestern population, I said today’s biologists/administrators appear to “attempt to re-write the history of our (earlier) efforts with words like “management convenience” to describe the Southwestern recovery area that for over 25 years delineated important federal and state management actions to protect and enhance Bald Eagles.” I think early decisions by FWS and their recovery teams to create recovery goals, plans and areas still have great legitimacy. These decisions resulted in significant responses by numerous agencies and organizations, and had major consequences relative to projects like Central Arizona Project and Orme Dam. How can FWS put in motion 30 years of conservation efforts beginning in the mid-1970s and then in isolation decide that the delisting goal is not needed, past detailed efforts to delineate important eagle areas are useless, and places that were the focus of past surveys and management decisions were simply administrative boundaries?

I quite honestly do not understand statements made by FWS in the delisting rule that recovery regions were simply established for “administrative boundaries” and that scientists didn’t have a good grasp on important areas for bald eagles in the early years of assessing eagle recovery needs. The Southwestern recovery area for bald eagles is biologically significant, and management decisions relative to this species continue to be legitimate today. Arizona’s Sonoran bald eagle population, lying within the Southwestern recovery region, still represents a significant eagle population that on a national platform nearly 25 years ago was acknowledged by scientists around the country at joint meetings of bald eagle recovery teams. I represented the Southwestern recovery team as the recovery team leader at these meetings.

In conclusion, our understanding of bald eagles that live and nest along waters that border the Sonoran Desert has been an evolution. It began with wonder in the minds of early pioneer scientists when they discovered in the relatively stark and arid landscape of Arizona an eagle normally associated with coastal regions and large rivers and lakes near forest lands. It has grown to include a large body of biological data that continues to reveal the unique nature of Arizona’s bald eagle population. To ignore this fact is to dash the hard work and science that has contributed to past and hopefully future efforts to protect Arizona’s Sonoran Desert bald eagles.

Bald Eagle in the Sonoran Desert Area: Glinski comments (7.July2008)
The Endangered Species Act (ESA) has afforded an effective means of protecting Arizona’s Sonoran bald eagle population from a wide array of threats. Perhaps the greatest threat to this population is the loss of its ESA status. Without ESA major threats that would immediately jeopardize Arizona’s Sonoran bald eagle population include a greatly diminished ability to protect its important habitats. Gone would be effective means of guarding critical aquatic habitats, and of maintaining effective oversight of projects that could potentially impact these habitats.

In the face of changing landscapes brought about by climate change and increasing demands for water resources and space due to the greatest growth of human population in the United States, bald eagles in Arizona face daunting challenges for survival. Without an aquatic component to the ecosystem occupied by Sonoran bald eagles, this species is lost. The ability to protect this aquatic component does not exist in Arizona water law as clearly as in federal law, where the connection between ground and surface water has been settled. Without the ESA to afford a water protection nexus, there is relatively little hope of securing essential aquatic habitat for Sonoran bald eagles.

The so-called “Eagle Act” protection strategy that FWS is proposing for the bald eagle has been offered as a substitute for ESA protection. However, this proposed process leaves discretion to obtain a take permit with either a government agency on government (city, county, state or federal) land or a private individual on private land. ESA requires federal agencies to get FWS concurrence on “may affect” actions on federal lands or where a federal permit is needed. This requirement affords a greater chance for professional biological expertise to enter the process.

An important document that summarizes the threats to the Sonoran bald eagles is the Arizona Game and Fish Department’s (AGFD) publication, “Conservation Assessment and Strategy for the Bald Eagle in Arizona” (Driscoll, J.T., K.V. Jacobson, G.L. Beatty, J.S. Canaca, and J.G. Koloszar. 2006. Conservation assessment and strategy for the bald eagle in Arizona. Nongame and Endangered Wildlife Program Technical Report 173. Arizona Game and Fish Department, Phoenix, Arizona). In my view this presents the best overview of threats to Sonoran bald eagles, and taken cumulatively, these issues pose an overwhelming dilemma to bald eagle managers.

The following are some threat issues from this report:

Recreation
“Most of the bald eagle breeding areas in Arizona are located in the Gila, Salt, and Verde drainages near Maricopa County. Over the last decade, the county’s human population was the fastest growing in the state increasing to more than 3 million (U.S. Census Bureau 2000). Likewise, the demand for limited water-based recreation opportunities of the desert has increased respectively. The Nest Watch Program recorded a 3-fold increase in the average number of human activities within 1 km of all monitored bald eagle BAs in the last 16 years.”

Fishing Line
“Fishing line and tackle are a common threat to bald eagles in Arizona. Most encounters derive from bald eagles catching dead fish with fishing material attached or collecting it for nest material, however there are other ways: an adult became entangled while perched on the shoreline, another swallowed fishing line (and possibly a hook) while feeding on a dead fish, and an angler cast a lure directly into a nest.”

Fish Diversity
“Prey availability strongly influences bald eagle productivity. The availability of prey during in the months preceding egg-laying affects the female’s egg production, during the nestling stage it affects the survivorship of nestlings and post-fledging juveniles. Thus, any factor that affects the adults’ ability to acquire food can influence productivity and survivorship. For example, the introduction of predatory flathead catfish in the late 1970s has decreased fish diversity and abundance on the upper Salt River by nearly extirpating all other fish species available to bald eagles. Flathead catfish, while available as bald eagle prey when smaller, grow to large sizes (up to 50 lbs.) making them unavailable as prey. AGFD
surveys show their populations have increased on the upper Salt River, while populations of other fish species have decreased. In turn, productivity of four bald eagle BAs on the upper Salt River has decreased from 1.12 in the 1980s to 0.29 in the 1990s.”

“Non-native fish have out-competed, preyed upon, and subsequently replaced native fish populations in many central Arizona rivers. Hunt et al. (1992) cited fish diversity as a crucial feature of a suitable breeding location, and native suckers as an important prey item in riverine systems. Maintaining this diversity will help improve bald eagle productivity and enhance survivorship.”

The bald eagle is tied to a healthy balance of native and exotic fish populations; therefore essentially factors that endanger Arizona’s native fish are threat factors that impact the Sonoran bald eagle.

**Lead and mercury contamination**

Lead and mercury have been documented to exist in the population at toxic levels. The source of this contamination is variable, and likely expressed only in certain areas at specific times such as following periods of significant runoff from hillsides that had extensive historical mining activity.

Some final thoughts regarding threats to Sonoran bald eagles: Observations suggest that survival of juvenile eagles is a critical issue in maintaining the viability of the Sonoran bald eagle population. I request that FWS engage in support of the development of a population viability analysis that determines the significance of juvenile mortality and factors that can reduce this source of loss to the Sonoran bald eagle population.

Finally, the status of the dozen or so breeding pairs of Sonoran bald eagles in Mexico may offer a glimpse of what could happen to Arizona’s population if strong protective measures are removed.

I respectfully request that FWS find the Sonoran population of the bald eagle in Arizona a distinct population that holds special significance in relation to other bald eagle populations in the range of the species, and that ESA protection of this population be retained.

Sincerely,

Richard L. Glinski