

June 17, 2006

Ms. Michelle Morgan, Chief  
Branch of Recovery and Delisting  
Endangered Species Program  
U.S. Fish and Wildlife Service, Headquarters Office  
4401 N. Fairfax Drive, Room 420  
Arlington VA 22203

DIVISION OF ENDANGERED  
SPECIES-USFWS

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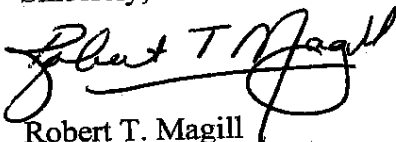
RE: RIN 1018-AF21 Proposed Delisting of the Bald Eagle

Dear Ms. Morgan:

Enclosed are comments on the proposed removal of the Bald eagle from the federal list of Endangered and Threatened Species. As the former Nongame Birds Program Manager for the Arizona Game and Fish Department, and Chair for the Southwestern Bald Eagle Management Committee, I have reviewed the proposed rule and find it insufficient to support the removal of the eagle from the protections of the Endangered Species Act.

I urge the Branch of Recovery and Delisting to reevaluate the proposed rule in light of the comments enclosed and maintain the federal protections for those recovery regions where delisting goals have not been met. In the case of the southwest, the confusion between downlisting goals, which were met, and delisting goals, which were never identified in recovery plans, is a fatal flaw in the proposal. Therefore, the bald eagle should continue to be protected as a threatened species in the southwest until realistic delisting goals can be established and obtained.

Sincerely,



Robert T. Magill

The Fish and Wildlife Service determined that the southwestern population of bald eagles was important enough to establish its own recovery region. Presumably, this conclusion was determined because of the importance to the geographic distribution to the bald eagle. Other possible or additional reasons are due to the unique setting of this bird in the desert southwest, maintaining important genetic diversity across its range, its cultural significance, and due to the unique threats facing the eagle in this part of the country and/or its range. For the bald eagle in the southwestern recovery region, and in a larger perspective, the southwestern portion of its range, the conclusion that the bald eagle in the southwestern recovery region no longer needs protection from the Endangered Species Act, is incorrect. The bald eagle is still threatened in the southwestern recovery region, across the broader southwestern portion of its range (the area which influences the status of the southwestern recovery region), and current protections are not adequate to protect the birds and its habitat.

1. The proposal contradicts itself with respect to conclusions regarding the status of the bald eagle in the southwestern recovery region, confuses downlisting goals with delisting goals, and subsequently provides no basis or analysis for delisting the bald eagle in the southwestern recovery region. The result of these issues is an arbitrary conclusion that the bald eagles in the southwestern recovery region should be delisted.

- a) The proposal concludes on pages 8249 that bald eagle "recovery goals have generally been met or exceeded for the species on a rangewide basis."

There were no goals included in the Southwestern Recovery Plan for removing the eagle from the list of threatened and endangered species. Therefore, it is not correct to state that goals were met or exceeded, because delisting goals do not exist.

- b) The proposal concludes on pages 8249 "...the surpassing of recovery targets over broad areas and on a regional basis, and the continued increase in eagle numbers since the 1995 reclassification from endangered to threatened, effectively compensates for any local shortfall in meeting targets in a few recovery sub-areas or regions."

This sentence by itself and combined with that described above is contradictory. This sentence concludes that recovery targets have been surpassed over broad areas and a regional basis, then concludes that shortfalls are compensated for. If there are shortfalls in meeting targets in a sub-area or region, then recovery targets could not be surpassed on a regional basis. Information is provided below in this document that describes that throughout the southwestern portion of the bald eagle's range, populations have not recovered, some have declined, and the distribution is nearly the same as when the bird was listed.

- c) The proposal concludes on page 8242 that, "...although the 1982 recovery plan does not have delisting goals for the southwestern recovery region," that "the goal established in the recovery plan has been exceeded."

The delisting proposal confuses the achievement of downlisting goals to threatened status with goals for delisting. The goals established for downlisting the bald eagle to

threatened have been met, but goals established for delisting do not exist. This proposal is specific to delisting the bald eagle. Therefore, it is misleading in discussing achievements in a delisting proposal to not clarify that the only goal which has been met is "downlisting to threatened."

The Service has not provided the public any basis, numeric goal, or target to determine that the bald eagle in the southwestern recovery region is indeed recovered to the point where it can be delisted, because no delisting goals or criteria were established in 24 years.

There is no doubt that the 1982 recovery plan does not constitute the best available science. In the 24 years since the bald eagle has been listed, the population in Arizona (which constitutes nearly all the eagles in the recovery region) has been subject to a multi-million dollar ecology study (Hunt et al. 1992), and annually, information is reported on its threats and status. To rely on the downlisting goals in this plan to provide a basis for delisting is grossly irresponsible to the public, the efforts of the agencies and people who worked on the bird, and most importantly to the bird. The Arizona Game and Fish Department has written for years in their reports that the plan is outdated and needs updating. The Service can not, in good faith, use this plan to provide any basis for delisting and claim that it represents the best available science.

Additionally, in this proposal, the Service has not provided an analysis of the southwestern population, its status and threats, but only conclusions. The only clear item provided is that numbers for reclassification to threatened have been exceeded (page 8244). Numeric goals, as this document points out (page 8241), are not absolute, and are not necessarily indicative of the stability, distribution, security, threats, and/or status of a species and whether it should be delisted or not. For example, in the early years of the effects of DDT, it is likely the numbers and distribution of bald eagles were high because it only effected reproduction and not necessarily adult eagles. It was the subsequent effect of reduced productivity that led to the reduction in range and numbers. As a result, the conclusion on the status of the southwestern recovery region is arbitrary.

2. The Service purposely confuses the achievement of downlisting goals and delisting goals when addressing Issue 10 (page 8244) and does an improper analysis of the bald eagle in the southwestern recovery region. When evaluating whether the eagle population in the Southwest is a Distinct Population Segment or not, the Service concludes that "...the bald eagle has significantly exceeded the reclassification goals outlined in the recovery plan. Therefore, we need not at this time analyze whether any particular geographic area would constitute a DPS pursuant to our DPS policy."

Surpassing reclassification criteria for downlisting does not constitute recovery or reaching recovery/delisting goals, because no recovery/delisting goals exist. Therefore, making the conclusion that the eagle has surpassed downlisting goals is not adequate to conclude that it does not need to evaluate the DPS. This is also a pre-decisional determination. In other words, the Service has not made a final decision on whether to de-list the eagle, and a public comment period has been opened to seek information in

order to determine if this decision is appropriate. The determination of a DPS would cause the Service to have to analyze the bald eagle's status differently in the southwestern recovery region. The Service would not be able to make conclusions about the status of the eagle in other parts of its range at the expense of the bald eagle in the southwestern recovery region, and may not conclude that the DPS has recovered if the analysis was completed. For example, the Service could not claim, "there are lots of eagles elsewhere so it does not matter what the status of the eagle in the Southwest is." The Service is therefore deferring its conclusion on a DPS, based upon a pre-decisional conclusion on its listed status to support its pre-decisional conclusion. It has basically told the public, this comment period and the information you may provide on the eagle is pointless, we have already determined that the eagle will be de-listed. This approach is bad logic, bad science, does a disservice to the eagle and the public, and at worse is arbitrary and violates the Administrative Procedures Act.

3. The Service writes, with respect to the status of the population of bald eagles in the southwest recovery region, that population numbers are nearly equal to the estimated historical occupancy and are expanding into new watersheds (page 8245).

There are no accurate estimations of historical distribution of bald eagles in the southwest recovery region. As a result, there is no basis to make this unfounded conclusion. If the Service wanted to try and make this comparison then using the recovery plan would not constitute the best available science. The recovery plan describes 2 pairs nesting in Baja, California, 1 pair on the upper Pecos River, NM, 5 breeding areas in Texas west of the 100<sup>th</sup> meridian, no eagles in western OK, and 41 or 42 unverified historical locations in Arizona.

This does not reflect the best available science on estimating historical distribution of bald eagles in Arizona and Baja, California. Hunt et al. (1992) researched the literature to learn what the distribution of eagles may have been in Arizona, and provided some perspective on its distribution. Also, an article in the Raptor Research provided a more clear and historical distribution of eagles nest in Baja, California (Henny et al. 1993).

Hunt et al. (1992) determined from a myriad of reports and personal communications that there were at least 82 known and potential historical nest sites, possible nest sites, and unverified reports. These were across the state in more varied locations than what exists today.

Hunt et al. (1992) also commented at length on the distribution and abundance of bald eagles in Arizona during more pristine conditions. They concluded, "...little is known about the historical population of eagles that occurred in Arizona. Clearly, the landscape has changed significantly, and we assume eagle numbers have changed." "On the basis of studies of bald eagle foraging ecology, we believe it is more parsimonious to hypothesize that bald eagles nested on rivers throughout the southwest in pristine times, than to suppose Stoneman and Mormon lakes supported the only pairs in the state. The reported nature of rivers and the assemblage of prey fishes both seem conducive to nesting success and suggest a richer and more extensive habitat in the lower desert than

might have been available on the Mogollon Plateau." The loss of river flow and fish diversity and abundance in Arizona and the southwestern United States to water, urban, commercial, and agricultural development has restricted the distribution of bald eagles in this geographic area.

Therefore, the current number of occupied sites in Arizona (approximately 40-45) does not compare to the over 80 locations described in Hunt et al. (1992), and ultimately, the Service can not make any accurate, reliable, or reasonable comparisons to the historical and current abundance of bald eagles in Arizona due to the lack of reliable information.

Henny et al. (1993) was able to more accurately report what is known about the historical and current distribution of bald eagles nesting in Baja, California. From prior to 1930 to 1970, "a scattering of pairs on both the Pacific and Gulf sides" existed. Reports describe at least 10 locations where eagles nested. At the time of this paper's publication, Henny et al. (1993) reports that "we doubt many more than three pairs now live in this region." While Henny's conclusion reflects the information provided in the recovery plan, the knowledge of a more extensive population and decline is now apparent. There appears to be no change in the bald eagle population in Baja, California (Conant and King 2006).

4. The Service writes on page 8243, that the "BGEPA provides indirect habitat protection by protecting the bald eagle itself from disturbance."

This is a nonsensical conclusion. There are no provisions in the BGEPA for habitat protection, and protecting an eagle from disturbance does not protect habitat, indirectly or directly.

5. The Service contradicts itself with respect to its conclusions on habitat availability for bald eagles in the Southwest.

On page 8245, the Service concludes, "the bald eagle may have reached its carrying capacity given the extent and nature of available nesting habitat." On page 8246, the Service concludes, "the current increasing population trend clearly indicates that habitat is not presently limiting the growth of the bald eagle population in the lower 48 States, that the population has not yet reached carrying capacity in many parts of its range, and that the population will continue increasing following delisting." These statements reach different conclusions.

This perspective on bald eagles does not accurately reflect the status and distribution of bald eagles in the southwestern portion of its range, including southern California, Baja California, Arizona, New Mexico, and Sonora, Mexico. The status of the overall population of bald eagle in the southwestern portion of its range will reflect on the status of the bald eagle in the southwestern recovery region. The bald eagle in the southwestern portion of its range has not recovered compared to areas in the southeast, northeast, or

northwest, and due to the impacts of development and water projects, it is not likely to change, but only become more difficult for eagles to persist.

Dietrich (1986) wrote on the known historic distribution of bald eagles in California documenting the decline of birds in the southern part of the state. Four locations for southern California were known prior to 1900, including the Channel Islands. Between 1900 and 1940, there were 9 locations for southern California, including the Channel Islands (representing, 24 to 60 nest sites). The years between 1940 and 1970 represent the decline and possible extirpation of bald eagles in southern California, with only two locations known to have had breeding eagles. A location in Santa Barbara County in the 1950s represented the last reported nesting on the southern California mainland. By 1981, there were no records in southern California, including the Channel Islands. Dietrich (1986) reported court testimony of an entomologist about the use of DDT, that "in California, we have been the most aggressive about it...we are the greatest users of insecticides in the United States, perhaps the world." Effects from the use of DDT are still being seen in efforts to restore successful breeding bald eagles to the Channel Islands through reintroductions (none are believed to be natural re-establishment). However, it appears that this year, eagles nested on Santa Cruz Island for the first time in decades. It is likely that eagles will never return to the southern California coast or rivers and reach their historical distribution or numbers, due to development and changes in the landscape, and are likely to only persist at a handful of man-made lakes such as Big Bear Lake.

Populations throughout the southwestern portion of the bald eagle's range have either declined or have remained in very small numbers similar to their status at listing. There is already included in this document citing a decline in status of the bald eagle in Baja, California from being on both sides of the gulf, with at least 10 historical breeding sites, to approximately 3 known territories today. The population in Sonora, Mexico, peaked at approximately 5 known territories in the late 80s and early 90s, but appears to have declined to about 2 active sites (Russell and Monson 1998). New Mexico's population of eagles, reported at 1 territory in the 1982 recovery plan, is now at about 3 territories. There appears to still be no territories in Texas and Oklahoma, west of the 100<sup>th</sup> meridian.

The history of these locations is germane in evaluating how or if these populations interact, their stability and/or vulnerability to threats, and eventually their status with respect to recovery. The recovery strategy of nearly all listed animals is to increase the number of animals and bring populations closer together. This is certainly true of what is important to the bald eagle. This strategy improves connectivity, genetic diversity, improves population stability, and protects against catastrophic losses/disease. In the southwestern portion of the bald eagles range, the bald eagle has increased in Arizona primarily within the same geographic area it occupied when it was listed (the Verde and Salt rivers in the Sonoran Desert), but has predominantly declined or not changed since listing elsewhere surrounding Arizona. There is likely no chance for eagles to recover in southern California, and no protections in Baja, California, or Sonora, Mexico. And there

appears to be little change in New Mexico and no change in west Texas, western Oklahoma, and for that matter Utah and Nevada.

The existing status of bald eagle population in the southwestern portion of its range, and how those populations have and have not changed over the years supports the information reported in this proposal with respect to the distance bald eagles from Arizona disperse and the data collected and conclusions made by the Arizona Game and Fish Department on the population. The proposal provides information on the distance eagles hatched in Arizona traveled from their natal area to breed. The proposal states that most bald eagles hatched in Arizona return to within 124 miles of where they hatched to breed. Because eagles in Arizona are morphologically smaller than bald eagle farther north, only immigration from eagles in nearby latitudes is expected. Therefore, extending approximately 125 miles surrounding central Arizona's breeding population of bald eagles there are no other bald eagle populations of any significance. Quite possibly, as Hunt et al.(1992) suggested, there may be genetic adaptations to desert survival and existence as these are the only desert nesting population of bald eagles. These perspectives led the Arizona Game and Fish Department (1999) to conclude: "to date, evidence from banding and identification of breeding adults defends the theory that Arizona's breeding population is not supported or maintained by immigration from other states or regions." The Department (1999) also concluded that, "this aspect of their natural history is important because it places a greater need for management, success, and survivorship of (Arizona) bald eagles."

The conclusion from this discussion is that the change or, more accurately, the lack of change in the distribution of bald eagles in the southwestern portion of its range has been instructive. Over the nearly 30 years since the bird has been listed, the bald eagle's distribution has not significantly changed in the southwestern portion of its range. Contrary to the statements made in the proposal on unlimited habitat for the bald eagle in the lower 48 states, there is not unlimited habitat availability for the bald eagle throughout the southwestern portion of the birds range. Changes to the bird's landscape, water flow, and prey species has disconnected populations of eagles. This topic will be discussed below in this document when threats to the population are addressed.

6. The proposal makes the conclusion (pages 8244) that "we are not aware of threats specific to any part of the eagle's range, including the Southwest...that suggest that the bald eagle is likely to become endangered in any particular area." It also concludes (page 8246) that "...habitat loss is not likely to become a limiting factor for the recovery regions...in the foreseeable future, and is not likely to rise to the level where the bald eagle meets the definition of threatened or endangered." The proposal also writes (page 8245) that, "...existing laws and regulations...will provide adequate protection from potential threats to maintain a recovered population of the bald eagle." These conclusions are absolutely incorrect with respect to bald eagles in the southwestern portion of its range and in the southwestern recovery region.

The content in this proposal, the eagle reports written by Hunt et al. (1992) and the Arizona Game and Fish Department (1999), the status of other listed species in the Southwest, the way land is managed in Arizona riparian areas, the information

provided by the Department of Interior and University of Arizona, and the known conflicts with growth and development contradict these conclusions.

Throughout Arizona, and through much of the southwestern portion of the bald eagles range, the conflicts and challenges with water management have been identified as a threat to listed and candidate species sharing the same habitat needs as the bald eagle. Just recently, the Service identified the headwater chub, a species that shares the Verde River and Tonto Creek drainage with the bald eagle as a candidate species and cited dewatering, channelization, groundwater pumping, pollution, development, over grazing, and alteration of riparian vegetation, etc. as reasons for being a candidate. The razorback sucker recovery plan (USFWS 1998) cites extensive water development projects have depleted flow, altered flow regimes, changed water quality, and fragmented habitat. The razorback sucker is also a fish which overlapped the range of the bald eagle in Arizona, but now only persists in low numbers in the Verde River drainage due to annual stocking. The spinedace and loach minnow, two small fishes that also overlapped portions of the bald eagles range in Arizona, are nearly extirpated. Along with predation by exotic fish, the same water related issues identified for the headwater chub are cited as reasons why these fish are listed. Without specifying every listed fish and their threats in Arizona, 21 of the 37 native fish are listed, many of their ranges overlap the bald eagle, and threats to the persistence of water and effects from water management practices are cited as reasons why. The southwestern willow flycatcher, a bird that also occupies the same habitats as the bald eagle in Arizona is listed as endangered largely due to two issues essential for bald eagles, reduced quality and abundance of riparian habitat and reduction in presence of water and water flow, groundwater pumping, etc. (USFWS 2002). There is no doubt that throughout the Southwest, species dependent on water resources are at risk due to past permanent changes to water management and future impacts due to water demands. These issues are not ones which have reversed in trend since the bald eagle has been listed, but have escalated, and are expected to continue to escalate in the future.

The conflicts associated with the amount of water available to meet the just the demands for human consumption in the Southwest and Arizona are highlighted in three recent documents issued by the Department of Interior (Water 2025: Preventing Crises and Conflict in the West, August 2005), the University of Arizona (Arizona's Water Future: Challenges and Opportunities, 2004), and American Rivers (America's Most Endangered Rivers 2006). The first paragraph of Water 2025, states that this document was written based upon the "reality that the demands for water in basins of the West exceed the available supply even in normal years." The document states that it is based on the following realities; 1) there is explosive population growth in areas of the West where is already scarce; 2) water shortages occur frequently in the West; 3) over allocated watersheds can cause crisis and conflict; 4) water facilities are aging; and 5) crisis management is not effective in dealing with water conflicts. The areas where conflict potential was highly likely and substantial includes central Arizona, the White Mountains of eastern Arizona, the Gila River from New Mexico through Arizona, northeastern Arizona, and the Colorado River on the California/Arizona border. Largely, the entire range of the bald eagle in Arizona is encompassed within these areas. In addition, areas in southern California and central New Mexico were also categorized as locations with

substantial and highly likely water supply crises. The University of Arizona wrote that the U.S. Geological Survey's conclusion on Arizona's water problem in 1963 is also true now. The quote from 1963 is the following, "Arizona's water problem is grave." The Arizona human population in the year 2000 of 5,130,632 is projected by the U.S. Department of Commerce and Arizona Department of Economic Security to increase by 2050 to 11,170,975 (a 118 percent change). No doubt, water will be an issue. The University of Arizona concluded that in Arizona, "because the water rights system does not acknowledge the hydrologic connection between surface water and groundwater, it generally is not possible to limit groundwater pumping in order to protect surface water rights or riparian habitat." "Over-pumping of water from wells has had significant impacts on surface flows in the state and has resulted in the elimination of a large percentage of the natural perennial flow of miles of rivers." "Most of the remaining perennial flow in the state are outside of the AMAs (Active Management Areas), may support areas of high biodiversity, including endangered species, and many have significant aesthetic and recreational value." "Impacts of pumping on surface water flows are of particular concern along the Salt, Verde, and San Pedro rivers." "Finding a balance between the needs of protected species through the Endangered Species Act and the water supply needs of growing communities will be an ongoing debate." Just recently, American Rivers listed the Verde River in Arizona as one the country's 10 most endangered rivers for 2006. It was listed due to human population growth, the demand for groundwater pumping to satisfy that growth, and the aforementioned laws that do not recognize the connection between groundwater and surface water. The Verde and Salt rivers are the most significant rivers for bald eagles in Arizona, the southwest recovery region, and likely the southwestern portion of the bird's range. The Arizona Game and Fish Department (1999) has acknowledged these realities for bald eagle by concluding that "the threats posed to breeding bald eagles by the loss of habitat and a booming human population demanding recreation, real estate, and water will only increase with time." The conclusions from this discussion is that there are reasonably foreseeable threats to the habitat of bald eagles in the southwest recovery region and the southwestern portion of the bird's range that the Service is fully aware of and that existing laws do not exist that adequately protect their habitat. To write otherwise, as the Service has done in this proposal, is ignoring the facts described by the Service, the Department of Interior, the University of Arizona, and the Arizona Game and Fish Department.

In addition to threats to the habitat of bald eagles, there are a myriad of other effects that are occurring that combined are clearly sufficient to cause significant impacts to the small population of eagles in this recovery region. These issues range from effects of small populations, parasites, human-caused recreation based impacts, specific habitat impacts, to the widespread presence of toxic levels of heavy metals, etc. Briefly summarized below are some of the issues raised by the Arizona Game and Fish Department (1999):

*Riparian habitat:* The Department concluded that some of the breeding areas dependent solely on riparian habitat for nesting trees and perches were at risk due to degrading riparian forests as a result of dam operations and other water and land management factors. They believed that it was reasonable to expect that 7 of 11 breeding areas would have fewer trees for critical activities such as

nesting and foraging. The Service (2003) concluded in its biological opinion for Salt River Project's Roosevelt HCP that it expects the loss of 5 breeding areas below Bartlett Dam on the lower Verde River over the next 50 years as a result of ongoing water and land management activities effects to trees needed by eagles.

Due to federal land management on a large portion of the eagle's range in Arizona, the role the Forest Service plays is important with respect to riparian habitat. There is often, however, a disconnect between the projects that are proposed to the Fish and Wildlife Service and their subsequent analysis, and what occurs on the landscape. In all, 50 to 75 percent of U.S. Forest Service livestock grazing allotments in Arizona and New Mexico were not monitored or had surpassed proposed utilization levels between the years of 1999-2003 (Forest Guardians 2004).

*Development:* Described above are issues about the human population growth, water supply and demand, and inadequacy of existing state laws to effectively provide protection of water resources for riparian and aquatic based species. The State of Arizona and individuals are not being held responsible for the continued and cumulative effects of water development on aquatic and riparian resources, and existing water law facilitates the continued impacts. Additionally the Department cited housing, golf courses, campgrounds, recreation, and agricultural developments that threaten water supply and habitat for bald eagles. Concluding that "individual projects may not present much harm to...breeding bald eagles,...however, developers do not focus on the cumulative effects of previous, concurrent, or future projects." The role development and human settlement of the southwestern United States has negatively influenced the bald eagle's distribution, abundance, success, and potential for recovery can not be underestimated. The development of the West, and Southwest, in particular, through fisheries, water (dams, groundwater pumping, etc.), agriculture (grazing, pesticides, etc.), and urban/commercial development has significantly altered the landscape for bald eagles. Some benefits have occurred as a result of the development of lakes, but the overall negative influence has been much greater. These are significant factors and especially when water is limited and growth of human population is increasing at its current pace.

*Disease or predation:* The Department discusses the small-size of the breeding eagle population in Arizona, the presence of Newcastle disease, avian cholera, and botulism that killed over 100,000 birds in the Salton Sea, AVN that killed many eagles in the Southeast, and that if a disease occurred in Arizona, that because of the small population, it could threaten their existence. Avian pox has been detected in Arizona eagles, and Mexican chicken bugs, a nest parasite, has been detected in 39 percent of Arizona cliff nests and has resulted in the death of eaglets (Hunt et al. 1992). Again, due to small population size and limited distribution, the effects and risk of these agents are amplified and pose significant threats to the bald eagle's persistence in the southwestern portion of its range and the southwest recovery region.

*Recreation:* The Department wrote that, "recreation pressures are increasing due to the expansion of the Phoenix metropolitan area, and to the scarcity of water-based recreational opportunities in the desert," and to the proximity of Phoenix to breeding bald eagles. In 1996 and 1997 alone, 13,999 human activities and 4,000 gunshots were recorded within a kilometer of 13 bald eagle nests. Signs and limited enforcement are not effective in keeping bald eagles free from deleterious human activities. The Department wrote that, at breeding areas with high recreational activity, nestwatchers are needed to help guide activity away from the active nest and educate people about the bald eagle's needs. Hunt et al. (1992) wrote that without nestwatchers at some sites, they believed eagles would not successfully reproduce because of the pressure from human activity. The amount and expectation of recreational use is along with the human population, to increase in the future, and continue to provide conflicts with breeding bald eagles.

*Fishing line:* The Department (1999) reported that between 1986 and 1998, fishing line and tackle in bald eagle nests and/or entanglement of birds have occurred 62 times (in 19 different breeding areas). Two nestlings have died due to entanglement. While the Department has actively tried to manage this issue for eagles and all wildlife by establishing recycling centers, it is not likely that this effort will significantly change the behavior or abundance of fishing line in the environment. The only way this issue is detected and the effects have been ameliorated is due to the presence of Arizona bald eagle nestwatchers and the availability of biologists to climb into nests and remove fishing line from nests and birds. Who knows how many eaglets or adults birds may have perished without the ability to identify and remove fishing line from nests and birds. This issue is one that is pervasive and widespread as evidenced by its presence throughout the eagle population.

*Native fish populations:* Stalmaster (1987) wrote that "although food is a vital resource to the bald eagle, very few protective measures have been taken to maintain or enhance prey sources. Perhaps biologists and the public have difficulty dealing with a management scheme that seems only remotely associated with eagle protection. In the Pacific Northwest for example, salmon runs have been devastated by over-fishing, habitat destruction, and mismanagement, but people are concerned about the effects to sport and commercial fishing, not to eagles. Unfortunately, the same attitudes exist throughout much of the country (Stalmaster 1987)." This perspective is also shared by the management of fish for bald eagles in Arizona.

The abundance, diversity, availability, and continuity of prey for bald eagles are essential for successful reproduction (Stalmaster 1987). Crucial prey items in the temporal sequencing of fish (Hunt et al. 1992) needed for bald eagles acquiring food from rivers are Sonoran and desert suckers (Hunt et al. 1992). The Department, since the completion of Hunt et al. (1992) study, has identified the

continued decline of native suckers on the upper Salt River, loss of fish diversity, and the subsequent decline of eagle productivity as a result of the proliferation of exotic fish. As mentioned earlier, the presence and continued dominance of exotic predatory fish in Arizona streams is an issue which has caused an overwhelming proportion of the native fish to be federally-listed. While eagles will take advantage of exotic fish when they become available to them, the lack of another fish to fill the sucker's role, has caused dramatic effects. The Department reports that productivity declined on the upper Salt River (at 6 territories) from 0.67 in the 1980s (when suckers were present), to 0.26 in the 1990s and 0.34 in the 2000s, following the loss of these fish species. Any bald eagle territory dependent solely on prey from a riverine system (one where a lake is not a part of its foraging area), should be expected to encounter this same issue over time without an effort to improve native fish populations in main stem Arizona rivers. The same scenario observed on the Salt River is being detected on the Verde River (Bonar et al. 2004) upstream of Horseshoe Lake where native fish populations are declining. Therefore, the threat to prey populations (primarily Sonoran and desert suckers) for successful bald eagle reproduction is increasing due to the continued changes caused by exotic predatory fish.

*Heavy metals:* The Department reported that heavy metal tests performed on Arizona eagle eggs between 1977 and 1985, revealed mercury concentrations above those reported for most other North American populations. Fish collected by the Service in the late 1980s found elevated mercury concentrations in fish throughout portions of the Arizona eagle's breeding range. Of 13 Arizona bald eagle eggs collected between 1994 and 1997, over half (n=7) had toxic levels of mercury ranging from 2.11 to 8.02 ppm.

*Organochlorines:* The Department reports that DDE levels high enough to cause failure in bald eagle eggs were detected in two eggs collected between 1994 and 1997.

*Adult mortality and presence of subadult breeders:* The Department reports that Gerrard et al. (1992) concluded that acceptable mortality rates for a breeding population was between 6.5 and 7.7 percent annually. In Arizona from 1987 to 1990, 16 percent annual mortality was detected, and from 1991 to 1998, annual adult mortality averaged 11.9 percent.

The Department also reports that for an 11 year period concluding in 1998, nearly 40 percent of all identified recruits into the Arizona breeding population were in subadult plumage. That phenomena is considered rare (Hunt et al. 1992). They are not certain of the reason for this occurrence, but both AGFD and Hunt et al. (1992) link the high amount of adult mortality as a possible reason.

The Department and Hunt et al. (1992) describe that having adult mortality exceed acceptable mortality rates for an extended period of time can cause increased recruitment from the floating population of eagles. This effectively

drains the floating population of adult birds, allowing subadult eagles opportunities to fill vacancies.

The identification of high adult mortality and regular recruitment of subadult breeding bald eagles are linked and do not provide positive reflections on the health and/or structure of the bald eagle population, and subsequently provides concern for this productivity, survivorship, and mortality within this small, isolated population.

*Natal origin of breeding adults:* The Department and others in Arizona, after conducting intensive banding (256 eaglets from 1977 and 1998) and re-sighting studies (74.5 percent of breeding population between 1991 and 1998) on the breeding population of Arizona bald eagles, concluded that Arizona's breeding population is effectively closed. Over 20 years of banding and about a decade of re-sighting has resulted in detecting only one immigrant and one emigrant. As of 1998, the breeding population had steadily risen from one being largely unbanded to one in which over half of the population wore a band placed on while it was a nestling. Hunt et al. (1992) concluded that, "it is prudent to assume that the Arizona population of bald eagles is indeed isolated and may contain genes and co-adapted gene combinations appropriate to location conditions."

This result of this occurrence is instructive to understand how eagle populations may or may not interact with one another, the known bald eagle distribution, the sensitivity of populations to threats, and subsequently the degree of threat that exists within the southwestern recovery region and the eagle in the southwestern portion of its range. As described earlier, this information confirms what has been observed in eagle populations across the Southwest for the past 30 years or so. Eagles have not changed their geographic distribution across the southwestern portion of their range. As a result, populations have existed primarily on isolated locations without any effective interaction. This has resulted in decreasing or stagnant population numbers in all areas of the Southwest, with the exception of Arizona. As the Department points out, the result of this isolation is that the attention to the survival of Arizona bald eagles is paramount. Because the population can not rely on immigration from nearby populations, the risks, threats, and impacts to these populations are amplified, because their stability is compromised by being geographically isolated.

*Small population size:* While the Arizona eagle population has grown, the geographic area occupied by eagles producing eaglets is small, is overall similar to that when it was listed, which is still a significant concern. As the proposal points out, numbers alone are not necessarily indicative of recovery. Often, it is not only the numbers, but the distribution of birds that is just as important. The Service's recovery strategy for many bird species is to bring populations closer together and increase their numbers. Solely increasing numbers in a small geographic area does not necessarily improve the stability, connectivity, genetic

diversity, or prevent against catastrophic losses. In Arizona, the bald eagle primarily occupies the Verde and Salt rivers (SWBEMC web site). In 2005, the Verde River produced 13 eaglets from 17 sites and the Salt River produced 14 eaglets from 14 sites (27 eaglets/31 sites) (Jacobsen et al. 2005). Statewide, these two streams in 2005 represented 63 percent of all known sites (31/49) and produced 71 percent of all known eaglets (27/38) (Jacobsen et al. 2005). The growth in the Arizona eagle population, and subsequently the southwestern recovery region's, has largely occurred within the same geographic range that the bird occupied when it was listed, the Salt and Verde rivers. Having nearly all the birds and productivity limited to two drainages located in the central part of Arizona across a four state recovery region and the southwestern portion of the birds range does not follow the basic approaches of recovery, nor does it adhere to best available science that the Service has applied to the recovery of other animals.

*Impact of Management Programs:* It is likely, and the de-listing proposal supports this claim, that active management has been key to the Arizona population of eagles. Without it, the population would not have grown to what exists today. Existing actions such as seasonal closures, the Arizona Bald Eagle Nestwatch Program, and associated management from climbing into nests, have helped minimize the impact of all the combined direct and indirect effects to bald eagles. In some respects, the presence of this program has masked continued effects to habitat and other factors this Program can not influence. Since 1978, the Department (1999) reports that the Nestwatch Program has directly assisted in improving productivity by 16 percent. In other words, had the Nestwatch Program not existed, productivity, survivorship, and recruitment would be significantly lower. It is unknown exactly how these programs may have additionally assisted eagle productivity and survivorship indirectly through the education and protection done on-site by bald eagle nestwatchers, or by the removal of fishing line from nests, etc. There is little doubt however, that these indirect actions have caused the benefits of management to be greater than an already 16 percent increase in productivity. Without this management, of which there is no assurance or commitment of it persisting (and what may continue may not be adequate), reduced productivity following delisting can be expected from bald eagles in Arizona.

*Difference between endangered, threatened, and recovery:* This review of the southwest recovery region focuses on the population in Arizona. There appears to be no data readily available on the production of three bald eagle territories in New Mexico. In the 5 years prior to 1995 when the bald eagle was listed as endangered, there was an average of 18 eaglets produced statewide. From 1995 to 1999, when the eagle was listed at threatened, 24 eaglets were produced annually on average. From 2000 to 2005 an average of 31 eaglets were produced annually (SWBEMC web site, Jacobsen et al. 2004, 2005). Survivorship of Arizona bald eagles to breeding age is approximately 28 percent (Allison et al. 2003). Therefore, when calculating the expected survivorship of each cohort, the

difference between endangered, threatened, and delisting the bird throughout this recovery region is the survivorship of two eagles, from 5 eagles while endangered, to 7 while threatened, to 9 while being proposed for delisting. If New Mexico is included, an additional bird can probably be added.

Remember that while the number of territories has increased, that increase does not necessarily result in a corresponding number of nestlings. It is ultimately the product and location of those territories that can provide some measure of recovery. Many new territories are in poor habitat that does not produce nestlings. Not every territory has a pair of eagles, not every pair of eagles lays eggs, not every egg hatches, not every nestling fledges, and not every fledgling survives to breeding age. Therefore, it is instructive to evaluate the number of fledglings produced and their survivorship. The survivorship of two eagles between each downlisting phase is very small. We can not understand how the Service can justify, especially with the known amount of threats, that the survivorship of two birds can provide the difference between having protection under the Endangered Species Act and not having protection under the Act, and four birds makes the difference between the bird listed as endangered and not having protection. Especially considering the small numbers associated with this population and how the impacts to small parts of the birds range or to a select number of territories could have such a significant impact. As a reminder, the Service has not provided the public an analysis of the population, its threats, etc. in their proposals to provide any justification for delisting.

As a result of the Service concluding that numbers are "significant" (page 8244) enough to delist the bald eagle in the southwestern recovery region, this analysis used that logic to conduct a statistical comparison. While there were no "reclassification" goals established for removing the eagle from the list of federally listed species, the Service did make a conclusion in 1995 that the eagle had reached threatened status. We therefore compared the amount of eaglets successfully fledged each year while the bird was listed as threatened (1995 to 1999) to the amount of eaglets fledged successfully each year while the bird was proposed for delisting (2000 to 2005). We compared the differences between the groups using a two-sample T-Test to actually determine whether it was "significant" statistically as claimed by the Service. The overall test for homogeneity did not detect any significant differences within the model ( $P=0.1395$ ,  $Z=-1.4775$ ). Therefore, contrary to the claim made by the Service, there is no "significant" statistical difference between the number of eaglets fledged while the eagle was listed as threatened, versus the period where the Service has concluded that numbers are sufficient to warrant delisting.

The Service's response to Issue 12 and 13 is confusing when faced with the question about threats and the role management programs have played in Arizona. The Service is non-responsive to any of the significant issues raised in both of these issues. By proposing to delist the eagle, the Service signifies that the bird no longer needs protection under the Act, but still writes that the bird still needs

protection/management. This approach seems contradictory. The Service does recognize that the Act is largely the catalyst for funding, management, and protection? How can the Service conclude that the bird no longer needs protection under the Act, and also determine that it still needs protection? The Service provides no assurance of funding or commitment to continue to manage bald eagles. Therefore, if it is anticipated that following delisting, management programs will not exist, then a conservative a 20 percent reduction in productivity (16% annually from Nestwatch Program and another 4% from indirect benefits) can be anticipated. If a 20 percent reduction in the average number of nestlings produced since the initial proposal to delist the eagle is calculated, then the 30 eaglets produced annually on the average since the bird has been proposed from delisting drops to 24 eaglets per year. This is exactly the same number of eaglets produced annually while the eagle was listed as threatened throughout the southwestern recovery region.

7. The conclusion after evaluating the delisting proposal is that:

- a) The Service has ignored the best scientific and commercial information.
- b) The Service is relying on the bald eagle reaching downlisting goals to threatened status in order to provide justification that the eagle has reached delisting goals.
- c) The Service relies on the Recovery Plan which does not represent the best scientific information available on the bald eagle in the southwestern recovery region.
- d) The Service's non-response to evaluating a DPS for the southwest recovery region, subsequently violates the Administrative Procedures Act by being pre-decisional on its decision to delist the bald eagle. The Service can not claim it does not need to do an analysis for a DPS by including in a proposal it has already made a decision that the bird has recovered.
- e) By ignoring to explore or conduct an analysis of a DPS, the Service effectively changes the scope of its analysis to include the entire range of the bald eagle which allows them to minimize continuing and increasing threats to the bald eagle in the southwestern recovery region and the southwestern portion of its range.
- f) The Service does not provide any threats analysis on how or why the bald eagle in the southwestern recovery region has reached recovery, but only provides an arbitrary conclusion that existing numbers are adequate.
- g) The Service incorrectly equates historical numbers to current number of bald eagle territories in Arizona by ignoring the best available science.
- h) Contrary to the statements made in the proposal on unlimited habitat for the bald eagle in the lower 48 states, there is not unlimited habitat availability for the bald eagle throughout the southwestern portion of the birds range and this is confirmed by the lack of change in the distribution of territories across the region and portion of the birds range.
- i) The Service concludes there are no significant threats to the bald eagle or its habitat in the southwestern portion of their range. This conclusion is, without question, wrong.
  - 1. A variety of federally listed aquatic dependent species share the same habitat and habitat requirements as the bald eagles.

2. The Department of Interior concluded that water availability in Arizona, New Mexico, and southern California along drainages used by bald eagles are highly likely to reach a crisis stage.
  3. Existing state law in Arizona is inadequate to protect water resources necessary for bald eagles on the most significant rivers it occupies in Arizona.
  4. Federal land management of grazing and the evaluation of those activities do not reflect what occurs on the landscape, and subsequently continues to degrade watersheds and impact riparian areas.
  5. The University of Arizona identified the Salt and Verde rivers as those where it is concerned that existing laws are not sufficient to protect surface water and riparian habitat (these are the two most important rivers in for the eagle in Arizona, the southwestern recovery region, and likely the entire southwestern portion for the eagles range).
  6. American Rivers has designated the Verde River, a stream that produces at least 30 percent of all eagles in the southwest recovery region, as one of the top 10 most endangered rivers in the United States of America.
  7. The Arizona Game and Fish Department and Fish and Wildlife Service both anticipate that due to loss of riparian habitat the loss of 5 to 7 bald eagle breeding areas in the future.
  8. The University of Arizona cited current water resources as not being adequate and most of Arizona (where eagles nest) is outside of Active (water) Management Areas.
  9. Human populations are increasing, which increases the demand for water, water based recreation, water resources, and development.
  10. In Arizona, the State and Federal government anticipate that human population it is anticipated to grow over 100 percent in the near future.
  11. The Arizona Game and Fish Department and Fish and Wildlife Service have concluded that loss of native fish species (to predatory exotic fish) essential to bald eagle success along the entire upper Salt River has reduced productivity, and has been reported as occurring on the Verde River.
  12. High levels of recreation, due to the proximity of bald eagles to the metropolitan Phoenix Area, exert pressure on the success of breeding eagles.
  13. The amount of recreation is anticipated to increase with increasing human population growth.
  14. Mexican chicken bugs persist in cliff nests throughout the population that kill nestlings.
  15. Mercury is present throughout the bird's breeding range in Arizona that is at toxic levels that prevents hatching of eggs.
  16. Fishing line is a pervasive threat throughout the population which has entangled adult and nestling eagles to their deaths.
  17. Mortality level of breeding adults and presence of subadult breeding birds indicates excessive adult mortality.
- j) The isolated nature of the Arizona population from other breeding populations amplifies the continued and increasing impacts to the population. It therefore causes there to be a greater importance to the success and survivorship of eagles hatched in Arizona for the

- persistence of eagles in the southwest recovery region and the southwestern portion of their range.
- k) The difference in survivorship of only two eagles between proposed for delisting, threatened, and endangered status does not represent recovery for the bald eagle in the southwestern recovery region.
  - l) The Service concluded that the number of bald eagles has "significantly" exceeded its reclassification criteria. A statistical analysis comparing the number of eaglets fledged annually in Arizona for the five years the bird was listed as threatened to the six years it has been proposed for delisting concluded that there was no statistical "significance."
  - m) The absence of the comprehensive management post delisting would reduce productivity and survivorship similar to the same success as when the eagle was listed as threatened.
  - n) There is no commitment by any agency to assure the appropriate level of management and habitat protection for bald eagles in Arizona, the southwestern recovery region, or the southwestern portion of the bald eagle's range.
  - o) The bald eagle in Arizona, the southwestern recovery region, and the southwestern portion of the bald eagle's range is still threatened and should not be removed from the list of federally listed species under the Endangered Species Act.

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**Page 8238:**

The proposal says that the best available scientific and commercial data indicates that the bald eagle has recovered.

**Comment:** We provide caution to the authors that they make conclusions made for the bald eagle in the Southwestern Recovery Region based on downlisting (not delisting goals) from a plan that is outdated. There were no delisting goals established in the Recovery Plan, and it has long been recognized that the 1982 Southwestern Recovery Plan is outdated. Therefore, reliance on targets or numbers provided in this plan would not constitute using the best scientific and commercial data available to make such a decision.

**Page 8244:**

The proposal states: "The bald eagle has significantly exceeded the reclassification goals outlined in the Recovery Plan."

**Comment:** We again point out that the only reclassification goals exceeded were the downlisting goals, there were no delisting goals. Therefore, making conclusions about the recovered status of the bald eagle in the

Southwestern Recovery Region without a detailed analysis of the threats may be considered conclusory.

Page 8244 and 8245:

The following quotes are from Issues 12 and 13:

"We are not aware of any threats specific to any part of the eagle's range, including the Southwest...that suggest that the bald eagle is likely to become endangered in any particular geographic area."

"...demographic data show the Arizona bald eagle population faces a high likelihood of decline...mortality of breeding adults is excessive...subadults constitute a higher percentage of breeding eagles...fledgling mortality is excessive...direct human intervention...has saved 16 percent of all southwestern bald eagle fledglings...threats to the continued existence of the bald eagle in the southwest are increasing...habitat loss, river dewatering, human encroachment through recreation, development, toxic substances, low-flying aircraft, fishing line entanglement, grazing, and global warming."

"We fully recognize the role active management of bald eagle has played in the Southwest in achieving recovery."

"We will continue to work with other involved agencies to assure continuation of existing management and protection regimens."

"We agree that number of biological opinions have been issued relevant to the Southwest population of bald eagles."

Comment: The identified threats to bald eagles in the Southwestern Recovery Region have largely been identified in a draft conservation assessment developed by the Arizona Game and Fish Department and in biological opinions completed by the Service. These threats are significant, as are additional ones not identified in this proposal. For example, the Department has identified changes in fish populations caused by exotic fish that are believed to have caused reduced productivity and occupancy. Additionally, lead has been a regular mortality factor in wintering eagles, we have identified the further occurrence of inbreeding, we have identified West Nile Virus as a mortality agent of bald eagles, shooting continues to occur, and eagles have died due to consuming poisoned animals.

The response does not refute the existence of these issues, which we believe is an accurate conclusion. However, to indicate that the Service is not aware of any specific threats, including the Southwest is not accurate.

We know of no commitment from any agency to provide the funding and subsequent implementation of needed management efforts post delisting. The Arizona Game and Fish Department has been developing a plan for over 6 years, but it has not been finalized. Even when it is, the reality of agencies funding it at the required level, is not assured. The Bureau of Reclamation (currently a large funding source of existing management) affirmed this perspective in a newspaper article in the Arizona Republic. Much of the funds associated with maintaining this management program are associated with biological opinions, which will no longer be applicable if the bird is delisted. Signing an agreement to the Department's plan does not commit any agency to funding. We also know of no commitment by the Service to fund these management efforts. Therefore, working to assure continuation of these protections continue is not adequate when proposing to de-list the bald eagle. This assurance, we believe, must be acquired beforehand.

Therefore, we are at odds over the content in this proposal. We acknowledge that there are threats which require continued management and protection. This is true, these threats require continued management. These threats are those which reflect man-made factors affecting its continued existence, and threatened destruction, modification, or curtailment of its habitat and range. Therefore, without management, the effect of these threats would be exacerbated, causing declines in this small population. The act of delisting an animal determines that protections are no longer needed. Yet, we have concluded in this document that, in fact, threats are real and they require continued protection.

Page 8245:

"The current status of the Southwest Recovery Region indicates that population numbers are nearly equal to the estimated historical occupancy and are expanding into new watersheds."

Comment: This data is apparently referring to the information provided in the Recovery Plan. This is outdated information. Hunt et al. (1992) conducted a more thorough search and concluded that there were 82 locations that were of the same quality data reported in the Recovery Plan. This means that these reports identify a population that is nearly double, not similar to existing numbers.

However, we caution against relying on any historical information for Arizona to make any conclusions about the present population's status. It is our opinion that there is no reliable historical data to make valid comparison/contrast conclusions with the present population.

Page 8245 and 8246:

"The bald eagle may have reached its carrying capacity given the extent and nature of available nesting habitat."

"The current increasing population trend clearly indicates that habitat is not presently limiting the growth of the bald eagle population in the lower 48 States, that the population has not yet reached carrying capacity in many parts of its range, and that the population will continue increasing following delisting."

Comment: We believe these are conflicting conclusions.

Page 8249:

"...bald eagle recovery goals have generally been met or exceeded for the species on a rangewide basis."

Comment: No delisting goals are included in the Southwestern Recovery Plan.

