

U.S. Fish and Wildlife Service

FINAL REVISED
ENVIRONMENTAL ASSESSMENT,
MANAGEMENT PLAN,
AND
IMPLEMENTATION GUIDANCE

TAKE OF NESTLING AMERICAN PEREGRINE
FALCONS IN THE CONTIGUOUS UNITED
STATES AND ALASKA FOR USE IN FALCONRY



DIVISION OF MIGRATORY BIRD MANAGEMENT

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NOTE

This Final Revised Environmental Assessment and Management Plan explains our analysis of available information on American peregrine falcons in the western United States, the alternatives we considered in evaluating possible take of nestlings for falconry, and our selection of a preferred alternative.

We prepared this document to correct an error in the representation of the modeling done for the draft and final Environmental Assessment completed in 2001. Though peregrines occasionally breed in their second year, to be conservative we intended to model first breeding at age three. In the models in the earlier assessment, the breeding age for American peregrines was inadvertently set at two years of age. In this version we evaluate the effects of the proposed and alternative actions with varying proportions of two-year old peregrines breeding, which more closely approximates actual conditions.

To reflect changes in the population of American peregrine falcons in the West since delisting, we used data provided by the States on the numbers of nesting pairs and productivity since delisting. With those data, the evaluations herein are based on the most current data available. Those data show that recent productivity has averaged about 1.37 young produced per nesting attempt, and that the known contiguous western U.S. population is at least 10% larger than it was in 1998.

Data from the States indicate that the population of breeding American peregrine falcons in the West has grown since 1998 at rates greater than projected in earlier models. Our conversations with State biologists and the data summaries they provided indicate that the change was largely due to population growth rather than to increased search effort. Therefore, it is clear that one of the parameters used in the original modeling was incorrect.

- The current productivity data were provided by the States and are as accurate as possible.
- Based on published data, 62.5% is a reasonable, but conservative estimate of first-year mortality, so we continued to use this value in our assessment.
- Our analyses suggest the most important factor driving the rate of change in peregrine populations is adult mortality. Using 20% annual post-first-year mortality in the corrected models, we found that the population could not show the population growth that the data provided by the States indicated. We concluded that the estimates of post-first-year mortality were too high. We reevaluated the post-first-year mortality estimate as part of this revision of the Environmental Assessment.

ABSTRACT

- We considered six alternatives for take of nestling American peregrine falcons (*Falco peregrinus anatum*) in Alaska and the contiguous United States west of 100° longitude. We based this assessment on recent population and productivity data for the western States.
- The alternatives we considered were no action, which would mean no take; take of 5, 10, 15 and 20 percent of annual production; and no restrictions on take beyond the existing falconry regulations.
- Rather than basing our decision on population growth with specific mortality and productivity rates, in this revision we focused on the effects on the rates of change in the population that would result from different levels of take.
- We determined that take of 5% of the nestlings would minimally reduce the rate of population increase. The take we believe might actually be allowed by the States would affect the rate of population change by less. The effect of a 5% level of take is so small that it would be undetectable in any population monitoring.
- The proposed action is a maximum take of 5% of nestlings in each State west of 100° longitude. Within that limit, take will be managed by the State consistent with the Federal falconry standards. Authorized take would be based on the most recent nesting population data for each State.

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The classic, stable Peregrine population is basically resident, with an annual adult mortality ranging from 10 to 15% and productivity of 1.0-2.0 young/pair, maintaining significant numbers of floaters at all combinations of juvenile mortality and productivity except when juvenile mortality reaches 70% and productivity is 1.0 young/pair. Breeding population is highly buffered by floater -to-breeder ratios commonly in range of 1:1 to 2:1.

White *et al.* 2002

INTRODUCTION

The peregrine falcon (*Falco peregrinus*) is a “generally wide-ranging but sparsely distributed” species (White *et al.* 2002); one of the most widespread and best-known raptors. It is found on all continents except Antarctica, and on many of the larger islands in the oceans. The American peregrine falcon (*F. p. anatum*) occurs throughout much of North America from the subarctic boreal forests of Alaska and Canada south to Mexico. It nests from central Alaska, central Yukon Territory, and northern Alberta and Saskatchewan, east to the Maritimes and south (excluding coastal areas north of the Columbia River in Washington and British Columbia) throughout western Canada and the United States to Baja California, Sonora, and the highlands of central Mexico. American peregrine falcons that nest in subarctic areas generally winter in South America. Migration of those that nest at lower latitudes is more variable; some are nonmigratory (Yates *et al.* 1988).

Peregrine falcons declined precipitously in North America following World War II (Kiff 1988). Research implicated chlorinated hydrocarbon pesticides, mainly DDT, used in the U.S. and Canada as causing the decline (see Risebrough and Peakall 1988). Chlorinated hydrocarbons, including DDT and its principal metabolite DDE, aldrin, dieldrin, and others, are stable, persistent compounds stored in fatty tissues of animals that ingest contaminated food (Fyfe *et al.* 1988). Use of these chemicals peaked in the 1950s and early 1960s and continued through the early 1970s. These chemical compounds seriously affected reproduction of peregrine falcons, particularly in the eastern U.S., where peregrines were essentially extirpated by the mid-1960s (Berger *et al.* 1969). Because of the decline, the American peregrine falcon was added to the list of endangered and threatened wildlife and plants in 1970.

Efforts beginning in the early 1970s to reestablish peregrine falcons in the eastern and midwestern U.S. successfully returned this species to areas from which it was extirpated by the 1960s. Peregrine falcons now nest in most States in their historical range east of 100° longitude, and are widespread in the West. In 1998, the known population of American peregrine falcons included 1650 pairs in the U.S. and Canada. Recovery plan productivity goals in all of the American peregrine falcon recovery regions were met or exceeded. By 2002, White *et al.* estimated that there were over 2000 pairs of American peregrine falcons breeding each year in the United States.

The information on measures of American peregrine falcon recovery led the U.S. Fish and Wildlife Service to remove the American peregrine falcon from the list of endangered and threatened wildlife and plants (delist) in August 1999 (USFWS 1999a). When it was delisted, management of the species shifted from the Division of Threatened and Endangered Species to the Division of Migratory Bird Management (DMBM). Regulations promulgated under the Migratory Bird Treaty Act (MBTA) allow activities that may remove individuals of some species from the wild, including take for falconry. Those activities are evaluated, permitted, and reviewed by the DMBM.

In June 1999, anticipating delisting, State fish and wildlife agencies, through the International Association of Fish and Wildlife Agencies (IAFWA), proposed allowing take of nestling peregrines for falconry (Taubert *et al.* 1999). The States proposed a 5% take of nestling American peregrine falcons based on the most recently documented annual production of young in States west of 100° longitude (*i.e.* Montana, Wyoming, Colorado, New Mexico, Idaho, Utah, Nevada, Arizona, Washington, Oregon, California, and Alaska); where approximately 82% of the nesting pairs in the United States were found in 1998. Taubert *et al.* stated that "...take of peregrines for falconry during the post delisting monitoring period should be conservative to avoid the risk of impeding further population expansion."

In October 1999, we published a Notice of Intent to prepare two Environmental Assessments and associated Management Plans for Take of Wild Peregrine Falcons (USFWS 1999b). We stated that we would protect nestling and dispersing juvenile American peregrine falcons from southeastern Canada and the eastern U.S. while considering a conservative take of nestlings from healthy populations in the western U.S. We published a Draft Environmental Assessment on nestling take for falconry in July 2000, and a final Environmental Assessment and Management Plan and a Finding of No Significant Impact in April and May 2001.

In February 2002, it came to our attention that there was an error in the way the results of modeling done for the earlier draft and final Environmental Assessments were expressed. Though peregrines sometimes breed at an early age, (*e.g.* Wendt and Septon 1991, Tordoff *et al.* 2000, 2001), to be conservative we had intended to model first breeding for peregrines at age three. As a result of the error, in March 2002 the Service decided to reconsider its decision to allow take of nestling American peregrine falcons. This revised Environmental Assessment, Management Plan, and Implementation Guidance corrects the earlier presentation of the modeling data.

In addition, we have concluded that it is probably more important and easier to understand if this assessment focuses on the effects of take on population change, rather than on absolute numbers shown by modeling. We believe the public is better served by including management information in a single document, so like the earlier document, this Environmental Assessment also includes information on management of take.

PURPOSE

In this Environmental Assessment and Management Plan, we consider a limited take of nestlings for falconry - with the goal of assuring protection for American peregrine falcons. We do so by evaluating the effects of take of nestling American peregrine falcons on estimates of population growth in the western United States. This includes evaluating the effects of the proposal for take of nestlings recommended by the States through the IAFWA, *i.e.* take in 11 contiguous western States and Alaska (Taubert *et al.* 1999), and alternatives.

We evaluated impacts on American peregrine falcons resulting from take of nestlings and recent fledglings for falconry in western States. We did not consider the take of eggs for raising birds for falconry, nor did we assess take for other purposes, such as captive propagation or research. We will evaluate requests for take for other purposes on a case-by-case basis pursuant to the MBTA and the National Environmental Policy Act.

NEED FOR ACTION

Cooperation with other natural resources management agencies is important for the Fish and Wildlife Service. In particular, the Service works closely with State agencies in management of migratory birds. As noted above, the IAFWA proposed allowing take of nestling peregrines for falconry (Taubert *et al.* 1999). This document is necessary to give full consideration to the proposal made by the States.

Possession of a trained raptor listed under 50 CFR part 10 for falconry is authorized only under a permit issued by the Service (50 CFR 21.28). Falconry is a viable form of recreation, and wild-caught peregrine falcons were an important component of American falconry prior to the species' listing in 1970 (Weaver 1988). We have received requests for take of peregrine falcon nestlings for use in the sport.

Prior to delisting of the American peregrine falcon, we amended captive propagation, scientific collecting, and falconry permits to preclude take of peregrine falcons from the wild. Those amendments likely will remain in effect until the federal falconry regulations are revised, but we may allow take if doing so will not adversely affect the population. We could do so by further amending selected permits to allow take for a specific period of time. Our intent here is to assess possible impacts to determine if take for falconry purposes should be authorized.

We reviewed the IAFWA request to determine whether the proposed action met any of the general criteria for preparation of an Environmental Impact Statement. We concluded that under the guidance in the Fish and Wildlife Service Manual (550 FW3), the IAFWA proposal does not warrant preparation of an EIS. In particular, we do not believe the proposal generates significant controversy over its environmental effects. Because falconry has gone on for decades with negligible impacts on populations of raptors, the proposal is not a precedent-setting action with wide-reaching implications.

SCOPING AND PUBLIC PARTICIPATION

In October 1999, we published a Notice of Intent to prepare two Environmental Assessments and associated Management Plans for Take of Wild Peregrine Falcons (USFWS 1999b). We published a Draft Environmental Assessment on nestling take for falconry in July 2000, and

opened a 60-day public comment period on the draft. We produced the final Environmental Assessment and Management Plan and a Finding of No Significant Impact in April and May 2001. This Revised Environmental Assessment was done to correct an error in the representation of the modeling done for the draft and final Environmental Assessment in 2000 and 2001.

The draft of this Revised Environmental Assessment was published in April 2003, and a period for public comment about it was opened on 3 May 2003. During the 60-day public comment period on the draft we accepted comments from agencies and the public.

AUTHORITY AND RESPONSIBILITY

Regulations allowing the take of migratory birds are authorized by the Migratory Bird Treaty Act (MBTA) (16 U.S.C. Sections 703-712), which implements the four bilateral migratory bird treaties the United States entered into with Canada, Mexico, Japan, and Russia. The MBTA authorizes the Secretary of the Interior to allow people to hunt, take, possess, sell, purchase, and transport migratory birds if those actions are compatible with the provisions of the treaties (16 U.S. C. Section 704).

AFFECTED ENVIRONMENT

NESTING POPULATION

The American peregrine falcon is widespread in western North America, from Mexico through Canada and Alaska. As noted, over 80% of the nesting American peregrine falcons in the United States occur in the western States. Also, there is a clear demarcation between eastern and western populations because very few nesting pairs of American peregrine falcons occur in the Great Plains States.

Because the eastern and western populations of American peregrine falcons in the United States are geographically distinct, and because the concentrations of nesting peregrines, such as in the canyon country of Utah and Arizona, are not defined by State boundaries, to respond to the request from the States it is most practical to evaluate the effects of take of American peregrine falcons in the western U.S. as occurring in a single population, though we discuss and analyze data from individual States in doing so. This does not mean, however, that there is no influence on the population from immigration or emigration. Because peregrines are highly mobile, such influences have been, and will continue to be, important to the population.

Prior to delisting, nesting recovery plan population goals were reached or exceeded in Alaska, Arizona, California, Colorado, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming. The nesting population in States west of 100° longitude in 1998 was at least

1091 pairs. Since then, the reported American peregrine falcon population in the West is larger, and the population in every western State has exceeded the recovery plan goal for the State - most by a substantial number (Table 1). There are not sufficient data available for peregrines to determine λ , the per capita change in a population over a unit of time (Williams *et al.* 2002). However, data provided by the States clearly shows that the number of nesting pairs of American peregrine falcons found in the western United States has continued to grow strongly. Recent published data support the evidence of an increase, with migration counts having "...confirmed strong increases, especially during the early to mid-1990s" in peregrine falcon observations in the western United States (Hoffman and Smith 2003).

PEREGRINE FALCON DEMOGRAPHY

The proposed take of nestling peregrines is, for purposes of determining its effect on the overall population, a proposal to allow a managed increase in first-year mortality. Evaluating the effects of an increase in first year mortality on rates of population growth is not straightforward. Peregrine falcon populations are "a classic example of a species whose population size is limited by Moffat's equilibrium" (Hunt 1998), where the number of territorial breeders changes as a consequence of spatially-imposed limits on reproduction. For peregrines, the number of available suitable nest sites limits breeding population size. However, when productivity rates exceed mortality rates, the actual size of the adult population may be much larger than breeding population size, owing to the accumulation of non-breeding adult "floaters" awaiting an opportunity to occupy a nest site and breed. "Peregrine populations are particularly disposed to such limitation because cliffs and other nesting sites are rare in most landscapes and because of territoriality" (W. Burnham and T. Cade, personal communication).

As the population continues to grow, density-dependent effects will play an increasing role in population regulation. As population growth "...begins to level off, and competition intensifies, mortality among young may increase, so that a progressively smaller proportion survive to breed" (Newton, 1998, page 18). Floaters "...represent an important buffer against change, but they may, if too numerous, also interfere with breeding success, causing a density-dependent modulation of overall population size" (G. Hunt, personal communication). In other words, competition between established breeders and floaters, both for nest sites and food, can be expected to reduce nesting success and perhaps first-year survival in saturated populations.

Peregrines typically begin breeding at age two (Newton 1979, Newton and Mearns 1988), though in an expanding population they may occasionally breed at age one. When a population is increasing and an insufficient number of older adults are available to occupy suitable nest sites, younger birds can take advantage of the opportunity to breed. Although younger birds are often not as successful as older breeders, the resultant lowering of the age at first breeding can still have a positive effect on population growth rates. The same effect can occur in a decreasing population, thereby buffering the effects of a decline.

TABLE 1. CURRENT PEREGRINE FALCON POPULATION DATA FOR WESTERN STATES. See Appendix 1 for details.

STATE	FWS RECOVERY PLAN GOAL	1998 REPORTED NESTING PAIRS	CURRENT NESTING PAIRS	INDICATED PERCENT CHANGE 1998-2003	PERCENT OF GOAL	RECENT PRODUCTIVITY ¹
Alaska	NA	301	930 (2003) ²	-	-	0.95 ³
Arizona	46	167 ⁴	167 ⁴	-	363	1.02
California	120	167	167 ⁵	-	≥139	1.32
Colorado	31	76 ⁶	87 (2003)	+ 14	281	1.30
Idaho	17	17	21 (2002) ⁷	+ 24	124	1.40
Montana	20	18	41 (2003)	+ 128	205	1.95
Nevada	5	6	9 (2002)	+ 50	180	No Data
New Mexico	23	32 ⁷	37 (2001) ⁷	+ 16 ⁷	161	1.47
Oregon	30	53 ⁸	65 ⁹	+ 23	217	1.57
Utah	21	164	164 ¹⁰	-	≥781	1.67
Washington	30	45	46 (2003) ¹¹	+ 2	153	1.35
Wyoming	14	42	58 (2003)	+ 38	414	1.75
Contiguous western U.S.	357	790	879	+ 11	246	1.54 ¹²
Western U.S.	NA	1,091	1,809	+ 30	-	1.36 ¹²

¹ Productivity usually is estimated after a site visit late in the nesting period, though two or more site visits may be required.

² Includes data for areas not previously assessed.

³ Data from J. Wright and S. Ambrose, 2003.

⁴ Correction of Final Delisting Rule data from D. Shroufe, Arizona Game and Fish Department. No statewide survey done since delisting. For this assessment, we assume no population growth.;

⁵ No statewide survey since delisting. For this assessment, we assume no population growth. Productivity data were compiled for 45 aeries in the State.

⁶ Correction of Final Delisting Rule data from J. Craig, Colorado Division of Wildlife.

⁷ Minimum number of nesting pairs and population change - not all known aeries surveyed.

⁸ Correction of Final Delisting Rule data from M. Nugent, Oregon Department of Fish and Wildlife.

⁹ Year 2000 population, no population data for 2001, 2002, or 2003..

¹⁰ For this assessment, we assume no population growth. No population data for 2001, 2002, or 2003.

¹¹ Not a complete statewide survey, actual nesting population is higher.

¹² Unweighted mean (see text).

Because of the complicated and as yet poorly understood interaction between population size and population growth rate under Moffat's equilibrium for peregrine falcons, and given mechanisms that could serve to buffer both increases and declines, it is difficult to predict the effects of the proposed take of nestling peregrines on population growth. However, given reasonable estimates of productivity and age-specific survival, we can assess the magnitude of change in growth rate expected with a given change in first year mortality in the absence of buffering changes in other demographic parameters. The data on productivity and age-specific mortality in the affected population are sufficient to assess the changes to an acceptable level of accuracy.

PRODUCTIVITY

The number of young produced by a nesting pair is difficult to assess because their aerie may be difficult to see and to visit. In many cases, the number of young fledged is determined on a visit to the site just after fledging, and it may be difficult to see all of the young. We recognize that there are biases in productivity estimates, and there probably is variation within and among the productivity data sets in different locations. However, based on the reports and discussions with State biologists, we conclude that the data collections comply with the standard suggested by Steenhof (1987), who proposed a minimum of two properly-timed surveys conducted to minimize disturbance of nesting pairs. We believe the data for New Mexico and Colorado surpass this standard. The productivity value for Alaska reflects the effort to correct productivity observations for mortality prior to fledging. We believe the State data are the best available on American peregrine falcon productivity in the western U.S.

Most productivity goals set by recovery teams in the West were met prior to delisting. Data from western States show that a conservative estimate for recent productivity is approximately 1.37 young per nesting attempt, which is the unweighted mean of the figures for the States (Table 1). An unweighted mean assigns equal importance to the values from each of the States, which we believe is appropriate because of differences in the annual survey activities among the States. In other words, the value for a State that surveys 100 aeries every year, for example, should be weighted no more than the value from a State that surveys 25 aeries every third year. The unweighted means better reflect differences in prey availability, habitat, and aerie distribution.

MORTALITY

Mortality is an important consideration in management of American peregrine falcons. Recent analyses of band return data for American peregrine falcons from Colorado indicate that first-year mortality is about 46%, and mortality in the second year is about 33% (J. Ver Steeg, personal communication). Band recoveries indicated that first year mortality in Arctic (*F. p. tundrius*) and American peregrine falcons was 62.5% from 1955 through 1985 (Yates *et al.* 1988).

Mortality was a maximum of 23% per year for adult female American peregrine falcons in Alaska (Ambrose and Riddle 1988), and was estimated at 25% in the U.S. (Enderson 1969). Enderson and Craig (1988) estimated a maximum loss for males and females of 16% per

year in Colorado in 1980 and 1981. Annual loss of territorial peregrines in northern New Mexico from 1980 through 1986 was estimated at 24%; annual loss of males was 15%; loss of females was 33% (Johnson 1988). More recently, first-year mortality was estimated at 54%, and post-first year mortality at 25% in New Mexico (C. Hayes, personal communication). Apparent mortality of post-second-year American peregrine falcons in Colorado in recent years has been approximately 20% per year (J. Ver Steeg, personal communication).

Because American peregrine falcons grade into Arctic peregrine falcons across the northern part of the American peregrine falcon range in North America, and because they share the same migration pathways across North America, mortality estimates for Arctic peregrine falcons also help to assess mortality of American peregrine falcons. Based on resightings of nesting Arctic peregrine falcon adults in Alaska, annual mortality there is estimated at 18 to 25% (J. Wright, personal communication). Annual mortality for adult Arctic peregrines on northwest Hudson Bay was 19% (Court *et al.* 1989).

To assess population growth of eastern peregrines, Grier and Barclay (1988) used 20% for post-first-year mortality to develop life tables for peregrines under different conditions. Sweeney *et al.* (1997) and Tordoff and Redig (1997) reported that mortality of rehabilitated peregrines in the Midwest was about 14% per year for birds one year old or more. Telford (1996, cited by White *et al.* 2002) estimated 18% turnover of females at aeries in the northeastern U.S. It is important to note that these estimates of mortality were derived from mark-recapture or band recovery analysis models. Neither approach readily distinguishes between mortality and permanent emigration. Accordingly, these results likely overestimate mortality in proportion to the probability of permanent emigration, which probably varies with age and sex (Newton and Mearns 1988). White *et al.* concluded that published studies indicate that dispersal ranges from 4% to 6% per year.

Though there is considerable variation in post-first-year survival in peregrines, White *et al.* (2002) reported that "true adult survival rates for migrants likely fall in range of 80-85%." White *et al.* believed that for residents the annual survival rate is in the range of 85-90%.

Although a high proportion of peregrines taken by falconers may escape and return to the wild (a factor that may reduce the impact of take for falconry on continued population growth), the subsequent fitness of these individuals is not known. Therefore, Taubert *et al.* (1999) recommended that "...until data on the comparative fitness of released peregrines are available, it would be "prudent to consider birds taken for falconry as permanently removed [from the wild]." That is what we have done for this assessment.

ALTERNATIVES

We considered five alternatives for take of nestling American peregrine falcons in the western United States and Alaska. Alternative 1 would maintain the status quo, with no authorized take for falconry.

Alternative 1: No Action. The addition in 1999 of a condition on falconry, captive propagation, and scientific collecting permits that prohibits take of peregrine falcons from the wild in the contiguous United States means that, absent a decision to remove that condition, peregrine falcons may not be taken from the wild for falconry. Under this alternative, the restriction would be left in place and no take of nestlings would be authorized.

Alternative 2: Take of 5% of annual production. This is the proposed action. In each State west of 100° longitude, take of up to 5% of the annual production of American peregrine falcons for use in falconry would be authorized. Under this alternative, with average productivity, a minimum nesting population of 15 pairs would be required before take for falconry in a State could be authorized. At 1.37 young per nesting attempt, 15 nesting pairs could be expected to produce 20 young. Take of 5% of 20 young would allow take of one nestling in the State for falconry. If the average productivity in the State is lower, the population there would have to be larger to allow take at this level.

Alternative 3: Take of 10% of annual production. In each State west of 100° longitude, take of up to 10% of the annual production of nestlings of American peregrine falcons for falconry would be authorized. Under this alternative, with average productivity, a minimum nesting population of 8 pairs would be required before take for falconry in a State could be authorized. At 1.37 young per nesting attempt, 8 nesting pairs could be expected to produce 10 young. Take of 10% of 10 young would allow capture of one nestling in the State for falconry. If the average productivity in the State is lower, the population there would have to be larger to allow take at this level.

Alternative 4: Take of 15% of annual production. In each State west of 100° longitude, take of up to 15% of the annual production of American peregrine falcons for use in falconry would be authorized. Under this alternative, with average productivity, a minimum nesting population of 6 pairs would be required before take for falconry in a State could be authorized. At 1.37 young per nesting attempt, 6 nesting pairs could be expected to produce 8 young. Take of 15% of 8 young would allow take of 1 nestling in the State for falconry. If the average productivity in the State is lower, the population there would have to be larger to allow take at this level.

Alternative 5: Take of 20% of annual production. In each State west of 100° longitude, take of up to 20% of the annual production of American peregrine falcons for use in falconry would be authorized. Under this alternative, with average productivity, a minimum nesting population of 4 pairs would be required before take for falconry in a State could

be authorized. At 1.37 young per nesting attempt, 4 nesting pairs could be expected to produce 5 young. Take of 20% of 6 young would allow take of 1 nestling in the State for falconry. If the average productivity in the State is lower, the population there would have to be larger to allow take at this level.

Alternative 6: lift all restrictions on take. Under this option, the restriction on take for falconry in States west of 100° longitude would be lifted. Regulation of take of American peregrine falcons would be managed by the States (within the limits of the Federal falconry standards).

ENVIRONMENTAL CONSEQUENCES OF THE ALTERNATIVES

The number of raptors taken for falconry is small. In 2002, 998 raptors were reported taken for falconry in the United States, approximately half of which were red-tailed hawks (*Buteo jamaicensis*) (USFWS data).

Kenward (1997) believed that healthy peregrine and goshawk populations can sustain 10%, and potentially 20% annual removal of juveniles by falconers. Conway *et al.* (1995) removed 9 to 27% of the production in a population of prairie falcons (*Falco mexicanus*) in Wyoming for a five-year period. They estimated the minimum sustainable yield to be 10 to 20% of the nestlings annually. Though data on the effects of take of nestling raptors are limited, we believe that the take of raptors by falconers is “inconsequential to populations” (USFWS 1988).

There might be slight effects of this action on wildlife habitats due to increased travel to nesting areas, but we discounted those effects because they would be negligible. We found no likely environmental impacts to air or water quality, to other wildlife populations, or to any other component of the environment.

Unintentional take associated with take of American peregrine falcons for falconry is possible. The Conway *et al.* (1995) study indicated that take of nestlings decreased the return rates of adult prairie falcons to aeries in that study. The same may be possible for peregrine falcons. Take could affect the condition of an aerie or the number of young fledged in a nesting attempt. This could happen, for example, if the aerie substrate is damaged or if nestlings are injured because of the attempt to take a nestling for falconry. Such events also might cause abandonment of the aerie. Take at any location may be restricted by a State if it decides to allow take of nestlings.

Not all raptors taken by falconers are permanently removed from the wild. Some are purposely released and others are lost when hunting. Available data suggest that the rate of return to the wild averages 30–40% annually for a variety of species (Kenward *et al.* 1981,

Mullenix and Millsap 1998). Loss rates for peregrines could be higher because peregrines range more widely in flight. Enough goshawks (*Accipiter gentilis*) lost by falconers survived to reestablish a population in Great Britain (Kenward *et al.* 1981). Still, Taubert *et al.* (1999) recommended that "...until data on the comparative fitness of released peregrines are available," it would be "prudent to consider birds taken for falconry as permanently removed." This is particularly true of birds taken as nestlings, which may do poorly in the wild if they escape.

There are other considerations in allowing the take of nestlings. Take of nestlings for falconry, if it reduced the population, might minimally reduce growth of nonconsumptive uses of peregrines such as avocational birdwatching.

Monetary gain for raptor propagators could decline slightly if wild birds are taken because the demand, and therefore the prices paid, for captive-bred birds might be reduced. However, falconers could be expected to spend money to travel to capture wild peregrines. We believe these economic impacts of allowing take for falconry would be minimal. We evaluated only the biological effects of take.

CUMULATIVE IMPACTS

We expect the cumulative impacts of human activities on peregrines to continue to be small. The largest single cause of the peregrine population decline was persistent pesticides - a problem substantially reduced by prohibition of the pesticides in the U.S. Another potential cause of mortality or abandonment of nesting, recreational rock climbing, sometimes occurs in areas used by nesting peregrine falcons (e.g. Garrison and Spencer 1996). However, White *et al.* (2002) reported that "Rock-climbing and activity of researchers are not usually detrimental when reasonable precautions [are] taken." Recreational rock climbing may need to be carefully managed in some locations, but will not have a substantial effect on the American peregrine falcon population. Land use activities likely will have the largest effect on peregrines, but the population growth in the western U.S. indicates that peregrines continue to expand their use of the available habitats despite possible detrimental land use activities.

Another possible impact is development of Endangered Species Habitat Conservation Plans (HCPs). There are currently 27 HCPs in effect that cover peregrine falcons in some way; 19 for locations in California, one for a location in Nevada, two for locations in Utah, and six for locations in Washington. In general, they may allow take of foraging habitat. Take of birds under the plans is very unlikely.

This assessment covers the one action that will occur in addition to ongoing impacts on American peregrine falcons in the western United States - take for falconry. We will continue to review new data on cumulative impacts of human activities and the status of the American peregrine falcon population in the western U.S.

DETERMINATION OF EFFECTS OF TAKE FOR FALCONRY

As discussed previously, modeling the effects of the proposed activity on peregrine populations is difficult given the complicated demography of the species. In our earlier assessment (USFWS 2001), we attempted to predict actual population growth rates using the best available estimates of productivity and age-specific survival. However, our model using the best data available predicted no change in population size, yet data from the States show considerable growth since 1998. Based on the reports from the States, we believe a small amount of this increase likely is due to different search efforts (e.g. searches in areas in which peregrines were not previously known to nest), but we believe the majority of the population growth seen since delisting is due to actual population change rather than to increased search efforts. We conclude that one or more of our parameter estimates in those models was inaccurate.

We believe the estimates of productivity are relatively accurate despite inherent biases. Moreover, the data analyses suggest that American peregrine falcon population growth rates are little affected by slight to moderate changes in productivity. This leads us to suspect that estimates of mortality are inflated. This is consistent with the inherent bias in these estimates due to an inability to account for permanent emigration. Our analyses indicate that populations are relatively unaffected by slight to moderate changes in first-year survival, which leads us to focus on adult survival as the parameter that is most important for American peregrine falcons. This conclusion is supported by the analyses reported by White *et al.* (2002).

We used the most current population and productivity data to extrapolate an estimate for post-first-year mortality in the western U.S. Based on those data, we believe that recent post-first-year mortality has been less than 20% per year.

There are two other factors we estimated for modeling purposes: age at first breeding, and sex ratio of nestlings and of the harvest. Peregrines can be expected to reproduce in their third year in a growing population. In the Midwest, about 11% of the nesting pairs included at least one second-year bird from 1987 through 1992 (Tordoff and Redig 1997). More recently they have comprised less than 2% of the nesting population (Tordoff *et al.* 2001). We believe that once the population stabilizes there will be a lower proportion of two-year-olds nesting. To be conservative in this assessment, we chose to account for the likelihood that the proportion of nesting second-year birds may decline over time. We assessed the effect of take in a population with different proportions of breeding two-year-olds and different rates of change in the percentage of two-year-olds breeding. We determined that changes in these values make relatively little difference in λ (Appendix 2). The calculations were based on the mean productivity reported for western States - 1.37 young per nesting attempt (Table 1, Appendix 2).

We assumed a 50:50 ratio of male and female nestlings and equal take of male and female nestlings, which we will monitor across all States that permit take. Our assessment of the effects of take is based on the results of deterministic modeling. To evaluate the maximum

effect of each level of take in the absence of buffering effects on other parameters, we determined the likely change in λ for the population. It is important to note that the actual value of λ is not important for these evaluations. Lambda varies with locale and year due to many factors, but the indicated growth of the American peregrine falcon population in the western United States provides strong evidence that λ has been above 1 since delisting. For consideration of the alternatives, it is necessary to consider their effects on λ .

BIOLOGICAL EFFECTS OF THE ALTERNATIVES

With limited take of nestlings, we expect continued growth of the population even after all available nesting sites are used. However, the growth would not be measurable because the number of floaters in the population might still continue to increase.

Alternative 1: No Action. Under this alternative there would be no take for falconry. Data provided by the States indicate a considerable increase in the number of known nesting pairs of American peregrine falcons in the western United States since delisting (Table 1).

Alternative 2 (Proposed Action): Take of 5% of annual production. This alternative would allow an initial annual take of up to 100 nestlings (pairs per State \times recent productivity for the State \times 0.05, with all take rounded to the next lowest whole number) if all States west of 100° longitude allow the maximum take. If this level of take were allowed, λ would be reduced by no more than 0.8%. Allowed take in each State under this alternative would be no greater than shown in Table 2.

Alternative 3: Take of 10% of annual production. This alternative would allow an initial annual take of up to 206 nestlings if all States west of 100° longitude allow the maximum take. If this level of take were allowed, λ would be reduced by approximately 1.5%. Allowed take in each State under this alternative would be no more than that shown in Table 2.

Alternative 4: Take of 15% of annual production. This alternative would allow an initial annual take of up to 309 nestlings if all States west of 100° longitude allow the maximum take. If this level of take were allowed, λ would be reduced by approximately 2.2%. Allowed take in each State under this alternative would be no more than that shown in Table 2.

Alternative 5: Take of 20% of annual production. This level of take would allow an initial annual take of up to 415 nestlings if all States west of 100° longitude allow the maximum take. If this level of take were allowed, λ would be reduced by approximately 3.1%. The maximum take allowed under this alternative in each State would be no more than that shown in Table 2.

Alternative 6: lift all restrictions on take. Under this alternative, the current permit amendment prohibiting take of peregrine falcons in the U.S. would be changed. Each State

TABLE 2. POSSIBLE ALLOWED TAKE OF NESTLING
AMERICAN PEREGRINE FALCONS IN 2004.

State	Nesting Population	Productivity	Production	Possible Take				Take Allowed by USFWS	Take Expected to be Allowed by the State in 2004
				@ 5%	@ 10%	@ 15%	@ 20%		
Alaska	930	0.95	883	44	88	132	176	44	6
Arizona	167	1.02	170	8	17	25	34	8	6
California	167	1.32	220	11	22	33	44	11	0
Colorado	87	1.30	113	5	11	16	22	5	4
Idaho	31	1.13	35	1	3	5	7	1	0
Montana	41	1.95	80	4	8	12	16	4	0
Nevada	9	Not Determined		0	0	0	0	0	0
New Mexico	37	1.47	54	2	5	8	10	2	0
Oregon	65	1.57	102	5	10	15	20	5	0
Utah	164	1.67	273	13	27	40	54	13	13
Washington	46	1.35	58	3	6	9	12	3	3
Wyoming	58	1.84	106	5	10	15	21	5	5
Total/ Overall			2094	101	207	310	416	101 (≈4.8%)	37 (≈1.8%)

west of 100° longitude would regulate take of nestlings for falconry, within the limits of the Federal falconry standards. There are about 4000 federally-permitted falconers in the United States. Approximately 3500 of them could legally take two peregrines for falconry each year if a State or States allowed it. If even half of the eligible falconers in the U.S. took a single nestling each, a significant proportion of the nestlings produced might be taken for falconry.

EFFECTS OF ALTERNATIVES ALLOWING TAKE

The only quantifiable negative environmental effect of proposed take is the possible effect on American peregrine falcon population growth; growth could decrease - noticeably so under alternative 6. However, our evaluation of changes in λ due to falconry take make it clear that this activity, if allowed, would have a very limited effect on American peregrine falcon population changes (Appendix 2). In fact, lowered production of fledglings has very little effect on the rate of population change compared to changes in adult survival. Under the proposed action, we believe the allowed take would change the rate of population very minimally (less than 1% reduction change in the rate of growth). The likely impact would be even smaller because we do not expect all western States to allow take (Table 2, Appendix 2). Such take would not produce a population change that could be detected in any population monitoring. Moreover, we believe that population buffering mechanisms (e.g. reduced aerie site competition) would further reduce the impacts of take on population growth.

TRANS-BOUNDARY EFFECTS OF ALTERNATIVES ALLOWING TAKE

Peregrine falcons exhibit considerable fidelity to nesting sites that they know. They “are highly philopatric and have strong tendencies to home back to their natal localities, rather than to explore far away for new nesting opportunities” (Cade 1982). We conclude that with this tendency and the limited effects on population growth of alternatives 1 through 5, there would be only a slight possibility of a minimal effect on peregrine populations outside the western United States. Under Alternative 6, a high level of take might slow population growth in new locations by allowing take of nestlings that might nest outside the area in which take for falconry would be allowed.

DATA QUALITY AND POPULATION EFFECTS OF TAKE OF NESTLINGS

Population data for American peregrine falcons in the western United States are reported in somewhat different ways and cover different time periods. Though we believe all population and nesting data meet the minimum prescribed by Steenhof (1987), there are State-to-State variations in conduct of surveys and there within-State variations in survey intensity or coverage. However, the data on American peregrine falcon population growth in the U.S. used to decide on delisting were reviewed by a Raptor Research Foundation committee and found to support the decision to delist (Millsap *et al.* 1998).

Office of Management and Budget data quality guidelines (2002) state that “For information judged to have more (less) important impacts, the degree of imprecision that is tolerated is reduced (increased).” The continued growth in the population is apparent even with conservative assumptions about the numbers of nesting pairs in several States. More important, our evaluation of take of a limited number of nestlings under an array of survival and productivity values makes it clear that take of nestlings has a very minimal effect on the growth of the population. We believe, therefore, that the variation in State reporting is acceptable under the Information Quality Act.

MANAGEMENT OF FALCONRY TAKE

We will use updated information to make changes in management of take of American peregrine falcons as necessary. Throughout the post-delisting monitoring period for American peregrine falcons, The Division of Migratory Bird Management will coordinate with the Division of Endangered Species to ensure that the most current information about the population in the western United States is used in management.

Each year, the species Each year a State/Federal Management Team (MT) will review the take of nestlings and recommend adjustments in allowed take of nestlings or other appropriate actions to the DMBM. We will use those recommendations and current information to adjust take as the population changes.

INFORMATION NEEDS

Each State that authorizes take of nestlings must report by November 1st each year to the DMBM with the following information.

1. The number of male and female nestlings taken for falconry.
2. The results of new population or productivity surveys.
3. Issues in management of take, such as problems with multiple visits to aeries or damage to aeries.
4. New data on re-use of aeries by nesting American peregrine falcons.
5. Suggestions to the MT for adjustments in management of take.

MANAGEMENT TEAM

The MT will consist of one State fish and wildlife agency employee selected from each of the State agencies responsible for peregrine falcon management in the 12 States in which take of nestlings for falconry might be allowed and one from the International Association of Fish and Wildlife Agencies. A representative from the U.S. Fish and Wildlife Service also will serve on the MT. The team will be co-chaired by the U.S. Fish and Wildlife Service representative and by a State agency representative. The MT will meet annually each spring, and each year will produce a report to the States and the Fish and Wildlife Service. The report will include sections on the adequacy of the management of take and on recommendations for changes in take.

FISH AND WILDLIFE SERVICE ACTIONS

The DMBM will provide the data to the MT by December 1st. The U.S. Fish and Wildlife Service will review the allowed take each year to assess effects of take for falconry on the nesting population. Updated population or productivity data will be considered as they become available, and will be used to revise the allowed take, as appropriate.

MANAGEMENT TEAM ACTIONS

Each year the MT will review the DMBM report on take of nestlings and additional information provided by the States. The MT will consider monitoring data, including the latest post-delisting monitoring information, and will review information on unintentional take of adults or nestlings, productivity information, and bias in take of female or male nestlings. The MT will then produce a report to the States and the U.S. Fish and Wildlife Service by January 15th each year, to include sections on compliance with, and adequacy of, the restrictions on take described in this plan and enforced by permit. The U.S. Fish and Wildlife Service will then adjust take as appropriate and make any other needed decisions about management of the populations and nestling take. If necessary, adjustments to take will include measures to balance take of male and female nestlings across the western States.

The best available information for each State will be used to determine the take allowed there. Take will not exceed the level decided on (for example, 5% of nestlings produced). To ensure that take has a minimal effect on λ , the number of nestlings authorized to be taken in any State will be reevaluated if State population monitoring shows a statistically significant

(13%) decline in territory occupancy in any of the three regions for Endangered Species Post-delisting monitoring (USFWS 2003) that include western States.

Because aerie occupancy is not the sole indicator of the status of a population, we also will evaluate the take in light of other reliable information about the status of the American peregrine falcon in the western United States. This may include regional or State information on productivity or population levels. However, a decline in productivity, for example, might not by itself be cause for a change in the level of take. As noted earlier, adult survival is the parameter that is most important for maintenance of American peregrine falcon populations. Due to competition between established pairs and floaters for nesting opportunities and increased competition among nesting pairs, a decline in productivity is likely as suitable nesting habitat is filled.

The States may regulate details of take, consistent with the federal falconry regulations. Those details may include whether to allow take of nestlings, timing and location of take of nestlings, restrictions on aerie access, and allocation of take among interested falconers. For example, any State in which take is allowed may employ models to assess population changes and the effects of take, and may implement take according to any guidance it develops. The allocation and management of take up to the 5% limit are at the discretion of each State in which take is allowed. The number of nestlings taken in any State may not be increased above the limit set with this Environmental Assessment unless a new State survey shows an increase in the nesting population or in productivity sufficient to warrant the increase, and unless the requested change is approved by the MT.

Information on changes in productivity or aerie use related to take of nestlings should be brought to the attention of the MT. That information may be used by the MT to revise the guidelines governing take of nestling American peregrine falcons.

If State monitoring shows a statistically significant decline (13%) in territory occupancy in any of the three regions for Endangered Species Post-delisting monitoring (USFWS 2003) that include western States, or if we determine that new impacts such as West Nile Virus or new pesticides substantially affect the population, we may revoke the authority for take.

The MT may recommend changes in the nestling take. However, to increase the percentage taken, or if a State east of those covered in the initial plan requests take, the MT will provide recommendations to the Fish and Wildlife Service on the issue. We will prepare a supplemental Environmental Assessment to assess the request and relevant peregrine population information.

IMPLEMENTATION OF TAKE

Falconers and the States should take measures to avoid damage to aeries and to minimize disturbance of Peregrine falcons. For example, individuals entering aeries should be skilled in rappelling and climbing safety measures. Removal of young from aeries vulnerable to physical damage should be carefully managed. Multiple visits by different people to individual American peregrine falcon aeries should not be allowed. Take of nestlings at aeries where the nestlings are deemed to be at high risk, such as those on bridges and building ledges, instead of at natural aeries, may be required by a State.

The following guidance lists required permit conditions, and is within the limits of the Federal falconry regulations. This guidance will be in effect as part of the process for taking falcons. The States could invoke more stringent conditions for take.

1. Young may not be removed from their aeries before they are 5 days of age.
2. To avoid premature fledging of nestlings, aeries should not be entered when young are 28 days or more of age.
3. At least one nestling must be left in each aerie prior to fledging.
4. A fledgling may be trapped for up to 30 days after fledging.
5. Each falconer who takes a nestling from the wild must report the sex and precise information about the capture location for each bird to the appropriate State wildlife agency and to the U.S. Fish and Wildlife Service within five days of the take of the bird. If the falconer determines after submitting the information about the sex of the bird that his or her initial report was incorrect, the report to the Fish and Wildlife Service should be corrected.
6. A falconer who takes a nestling from the wild must band it with a permanent, non-reusable, numbered Fish and Wildlife Service band that we or the falconer's State agency that regulates falconry will provide.
7. For potential stable isotope analyses and law enforcement purposes, the falconer also should submit two plucked breast feathers from the nestling after the bird is 30 days old. The feathers must be shipped or mailed to the Division of Migratory Bird Management; U.S. Fish and Wildlife Service; 4401 North Fairfax Drive, Mail Stop 4107; Arlington, Virginia 22203-1610. When submitting the feathers, the permittee should report precisely where the nestling was taken from the wild.

Until revised Federal falconry regulations are in place, the procedure in use for managing the take will be as follows.

1. A State that chooses to allow take will select permittees to do so.
2. The State will then notify the appropriate Regional Office to inform the Migratory Birds Permits Staff of the selections.
3. We will amend the permit of each of the individuals selected to allow him or her to take one nestling in that calendar year.

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CONSULTATION

To prepare this assessment, we consulted individuals in the following agencies and organizations for information and advice.

Alaska Department of Fish and Game
Arizona Game and Fish Department
California Department of Fish and Game
Colorado Division of Wildlife
Idaho Department of Fish and Game
International Association of Fish and Wildlife Agencies
Nevada Division of Wildlife
New Mexico Fish and Game Department
Montana Department of Fish, Wildlife and Parks
Oregon Department of Fish and Wildlife
Utah Division of Wildlife Resources
Washington Department of Fish and Wildlife
Wyoming Game and Fish Department

SOURCES OF CURRENT POPULATION INFORMATION

Alaska: John Wright, personal communication, February 2002; Kim Titus and John Wright, personal communication, 2002; John Wright, personal communications; 2003, B. Ritchie, personal communication 2003.

Arizona: Duane Shroufe, personal communication, 2001; Robert McGill, personal communication, 2003.

California: Ron Jurek, personal communication, 2002.

Colorado: Jeff Ver Steeg, personal communications, 2002; Tom Remington, personal communication, 2003.

Idaho: Rex Sallabanks, personal communications, 2002, 2003.

Montana: J. Sumner and R. Rogers, 2001. Montana Peregrine Falcon Survey. Sumner Consulting; Bozeman, Montana. Unpublished Report. Also Jeff Hagener, personal communication, February 2002; A. Dood, personal communication, 2003; R. Hazlewood (USFWS), 2003.

Nevada: Larry Neel, personal communications, February 2002 and August 2003.

New Mexico: Charles Hayes, IV; personal communication, January 2002, B. Thompson, personal communication, 2003.

Oregon: Martin Nugent, personal communication, February 2002; M. Morin (USFWS), 2003.

Utah: R. Norvell, personal communication, September 2003.

Washington: J. Brookshier; personal communication, January 2002; M. Morin (USFWS), 2003; E. Cummins, personal communication, November 2003.

Wyoming: J. Baughman; personal communication, January 2002; B. Oakleaf, personal communications, 2002, 2003.

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PREPARER

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APPENDIX 1
PRODUCTIVITY DATA PROVIDED BY THE STATES

Numbers of nesting pairs and young produced may be based
on samples rather than complete population information

State	KNOWN OUTCOME NESTING PAIRS						
	1998	1999	2000	2001	2002	2003	TOTAL
Alaska							930 ¹
Arizona							167
California ²				36		28	64
Colorado	78	73	97	96	87	67 ²	498
Idaho	17	21	23	20	21	31 ²	133
Montana	18	27	29	37	37	41 ²	189
Nevada				9	9		18
New Mexico ²		39	43	37			119
Oregon	51	54	65			36 ²	206
Utah							164
Washington	42	58	54	71	67	43 ²	335
Wyoming	44	42	46	42	59	58	291
Total Excluding Alaska							2184
TOTAL	250	314	357	348	280	282	3114

State	YOUNG PRODUCED						
	1998	1999	2000	2001	2002	2003	TOTAL
Alaska							883
Arizona							170
California				60		37	97
Colorado	157	140	208	122	132	90	849
Idaho	30	22	36	32	23	35	178
Montana	30	43	59	66	77	80	355
Nevada			Insufficient Data				
New Mexico		55	65	55			175
Oregon	70	81	85			36	272
Utah							273
Washington	81	79	75	112	87	58	492
Wyoming	84	57	83	81	97	107	509
Total Excluding Alaska							3370
TOTAL	211	396	611	528	416	443	4253

State	MEAN YOUNG PER NESTING PAIR						
	1998	1999	2000	2001	2002	2003	PERIOD
Alaska ³							0.95
Arizona							1.02
California				1.67		1.32	1.52
Colorado	1.96	1.59	2.12	1.36	1.65	1.30	1.68
Idaho	1.76	1.05	1.57	1.60	1.10	1.13	1.34
Montana	1.67	1.59	2.03	1.78	2.20	1.95	1.88
Nevada			Insufficient Data				
New Mexico		1.41	1.51	1.49			1.47
Oregon	1.37	1.50	1.31			1.57	1.32
Utah				1.30		1.67	1.49
Washington	1.93	1.36	1.39	1.58	1.30	1.35	1.47
Wyoming	1.91	1.36	1.80	1.93	1.64	1.84	1.75
Mean of State Means Without Alaska							1.49
Mean of State Means With Alaska							1.44
Mean Based on Known Outcomes - excluding Alaska (3370 young/2 184 nesting attempts))							1.54
Mean Based on Known Outcomes - including Alaska (4253 young/3114 nesting attempts)							1.37

¹ Extrapolation from known areas, J. Wright, B. Ritchie, 2003.

² Nesting attempts with known outcomes - not the complete nesting population.

³ Based on observations over 30 years, S. Ambrose, 2003.

⁴ Unweighted mean (average of State means).

APPENDIX 2

RATE OF POPULATION CHANGE WITH DIFFERENT PROPORTIONS OF TWO-YEAR-OLDS BREEDING AND DIFFERENT LEVELS OF TAKE

Productivity = 1.36 young per nesting attempt, first-year mortality = 62.5%.

Initial Percentage of 2-Year-Olds Breeding	Percent per Year Decrease in Proportion of 2-Year-Olds Breeding	Post-First-Year Mortality	Take Level	Λ
100	0	10%	0	1.11
			5%	1.10
			10%	1.09
			15%	1.08
			20%	1.07
		15%	0	1.06
			5%	1.05
			10%	1.04
			15%	1.03
			20%	1.02
		20%	0	1.00
			5%	0.99
			10%	0.99
			15%	0.98
			20%	0.97
	5	10%	0	1.09
			5%	1.09
			10%	1.08
			15%	1.07
			20%	1.06
		15%	0	1.04
			5%	1.03
			10%	1.03
			15%	1.02
			20%	1.01
		20%	0	0.99
			5%	0.98
			10%	0.97
			15%	0.97
			20%	0.96
	10	10%	0	1.09
			5%	1.08
			10%	1.07
			15%	1.06
			20%	1.06
		15%	0	1.03
			5%	1.03
			10%	1.02
			15%	1.01
			20%	1.00
		20%	0	0.98
			5%	0.98
			10%	0.97
			15%	0.96
			20%	0.95

Initial Percentage of 2-Year-Olds Breeding	Percent per Year Decrease in Proportion of 2-Year-Olds Breeding	Post-First-Year Mortality	Take Level	Λ
80	0	10%	0	1.10
			5%	1.09
			10%	1.08
			15%	1.08
			20%	1.07
		15%	0	1.05
			5%	1.04
			10%	1.03
			15%	1.02
			20%	1.02
		20%	0	1.00
			5%	0.99
			10%	0.98
			15%	0.97
			20%	0.96
	5	10%	0	1.09
			5%	1.08
			10%	1.07
			15%	1.07
			20%	1.06
		15%	0	1.04
			5%	1.03
			10%	1.02
			15%	1.02
			20%	1.01
		20%	0	0.99
			5%	0.98
			10%	0.97
			15%	0.96
			20%	0.96
	10	10%	0	1.09
			5%	1.08
			10%	1.07
			15%	1.06
			20%	1.06
		15%	0	1.03
			5%	1.03
			10%	1.02
			15%	1.01
			20%	1.00
		20%	0	0.98
			5%	0.97
			10%	0.97
			15%	0.96
			20%	0.95

Initial Percentage of 2-Year-Olds Breeding	Percent per Year Decrease in Proportion of 2-Year-Olds Breeding	Post-First-Year Mortality	Take Level	Λ
60	0	10%	0	1.09
			5%	1.09
			10%	1.08
			15%	1.07
			20%	1.06
		15%	0	1.04
			5%	1.03
			10%	1.03
			15%	1.02
			20%	1.01
		20%	0	0.99
			5%	0.98
			10%	0.97
			15%	0.97
			20%	0.96
	5	10%	0	1.09
			5%	1.08
			10%	1.07
			15%	1.06
			20%	1.06
		15%	0	1.04
			5%	1.03
			10%	1.02
			15%	1.01
			20%	1.01
		20%	0	0.98
			5%	0.98
			10%	0.97
			15%	0.96
			20%	0.95
	10	10%	0	1.08
			5%	1.08
			10%	1.07
			15%	1.06
			20%	1.05
		15%	0	1.03
			5%	1.02
			10%	1.02
			15%	1.01
			20%	1.00
		20%	0	0.98
			5%	0.97
			10%	0.96
			15%	0.96
			20%	0.95

Initial Percentage of 2-Year-Olds Breeding	Percent per Year Decrease in Proportion of 2-Year-Olds Breeding	Post-First-Year Mortality	Take Level	Λ
40	0	10%	0	1.09
			5%	1.08
			10%	1.07
			15%	1.07
			20%	1.06
		15%	0	1.04
			5%	1.03
			10%	1.02
			15%	1.01
			20%	1.01
		20%	0	0.98
			5%	0.98
			10%	0.97
			15%	0.96
			20%	0.95
	5	10%	0	1.08
			5%	1.08
			10%	1.07
			15%	1.06
			20%	1.05
		15%	0	1.03
			5%	1.02
			10%	1.02
			15%	1.01
			20%	1.00
		20%	0	0.98
			5%	0.97
			10%	0.97
			15%	0.96
			20%	0.95
	10	10%	0	1.08
			5%	1.07
			10%	1.07
			15%	1.06
			20%	1.05
		15%	0	1.03
			5%	1.02
			10%	1.02
			15%	1.01
			20%	1.00
		20%	0	0.98
			5%	0.97
			10%	0.96
			15%	0.96
			20%	0.95

Initial Percentage of 2-Year-Olds Breeding	Percent per Year Decrease in Proportion of 2-Year-Olds Breeding	Post-First-Year Mortality	Take Level	λ
20	0	10%	0	1.08
			5%	1.08
			10%	1.07
			15%	1.06
			20%	1.05
		15%	0	1.03
			5%	1.02
			10%	1.02
			15%	1.01
			20%	1.00
		20%	0	0.98
			5%	0.97
			10%	0.96
			15%	0.96
			20%	0.95
	5	10%	0	1.08
			5%	1.07
			10%	1.07
			15%	1.06
			20%	1.05
		15%	0	1.03
			5%	1.02
			10%	1.01
			15%	1.01
			20%	1.00
		20%	0	0.98
			5%	0.97
			10%	0.96
			15%	0.96
			20%	0.95
	10	10%	0	1.08
			5%	1.07
			10%	1.07
			15%	1.06
			20%	1.05
		15%	0	1.03
			5%	1.02
			10%	1.01
			15%	1.01
			20%	1.00
		20%	0	0.97
			5%	0.97
			10%	0.96
			15%	0.95
			20%	0.95

Initial Percentage of 2-Year-Olds Breeding	Post-First-Year Mortality	Take Level	Λ
0	10%	0	1.08
		5%	1.07
		10%	1.06
		15%	1.06
		20%	1.05
	15%	0	1.03
		5%	1.02
		10%	1.01
		15%	1.00
		20%	1.00
	20%	0	0.97
		5%	0.97
		10%	0.96
		15%	0.95
		20%	0.95

APPENDIX 3

ISSUES RAISED IN RESPONSE TO THE DRAFT REVISED ENVIRONMENTAL ASSESSMENT

We published a Federal Register Notice on 29 April 2003 announcing the availability of the Draft Revised Environmental Assessment and requesting comments on the draft (Federal Register: Volume 68, Number 82:22727-22728). The draft Revised EA was on our website as well. We also mailed the draft and a request for comments to all State wildlife agencies.

We considered all comments in revising the Draft Environmental Assessment. We received 945 electronic or written comment letters; 15 from State agencies and 930 from individuals and organizations. Thirteen agency responses endorsed allowing take of nestlings, and 2 responses were neutral. Of the individual and organization comments received, 924 supported the proposal to allow take and six opposed take of nestlings for use in falconry. The substantive comments and our responses are as follows. Similar comments are grouped for responses.

Issue. It is too soon after delisting to allow take for falconry. To determine population dynamics after delisting, take of nestlings should not be allowed for at least several generations.

- *"It is premature to add to the already existing pressures on falcons by allowing falconry take at this time. A decision on approving falconry take should be deferred until such time as monitoring results allow the FWS to determine the status of the bird absent the protections of the ESA."*

"According to the EA, the proposed take of nestling peregrines is "a proposal to allow a managed increase in first-year mortality. "It is inconceivable that this species needs to be managed, since it has only recently been deemed recovered and its populations have not yet been monitored post-delisting. The assumption that peregrines populations already need to be controlled is completely unjustifiable."

- *"We support Alternative 1: No Action, which states that "peregrine falcons may not be taken from the wild for falconry." Choosing any other alternative could have a detrimental effect on species that is still in the early stages of recovery."*
- *"In general, we believe that authorizing take of Peregrine falcons so soon after delisting is misguided and could have detrimental consequences for the species. The U.S. Fish and Wildlife Service...should not consider such actions until you complete the five-year post-delisting monitoring required by the Endangered Species Act and determine that the peregrine falcon continues to meet recovery goals without the protection of the ACT."*

Response. We said that this assessment is for a managed take of a proportion of the nestlings in the population. At delisting, American peregrine falcon populations had substantially exceeded recovery goals in the West. The population in the western United States continues its strong growth and is, in fact, recovered.

Activities that do not harm populations, as we believe is true of the proposed action, may be permitted. The best available data and our evaluation indicate that the proposed action can be taken without significantly affecting American peregrine falcon population growth in the West. We see no biological reason to delay an action that we believe has a very limited effects on the population. Monitoring will continue for many years. During that time, we will continue to assess the health of the peregrine population, and the Division of Migratory Bird Management will coordinate with the Division of Endangered Species to ensure that the most current information about the population in the western United States is used in management. If State territory occupancy declines in any of the three regions for Endangered Species post-delisting monitoring (USFWS 2003) that include western States, or if we determine that new impacts such as West Nile Virus or new pesticides substantially affect the population, we may revoke the authority for take.

Issue. "The section on "need" is completely unconvincing. It says only that wild-caught peregrines were an important component of American falconry prior to the species listing, and that falconers have requested the take of nestlings (EA 3). On the first point, we know that very few peregrines were taken for falconry in Colorado in the years before listing. The historic site for capturing these birds - which occurred when they were first-year birds of passage - was the coast of Texas. In any case the EA provides no data to back up this claim of importance. Second a request for a resource does not automatically require the government to provide that resource. Just because falconers have asked to take nestling peregrines does not mean that the US Fish and Wildlife Service has to let them take the birds. We see this situation not as a "need" but as a "want."

Response. We have revised the "Need for Action" section to address this concern. Requests for take of nestlings followed the proposal from the States, through the International Association of Fish and Wildlife Agencies, for the Fish and Wildlife Service to consider take of nestling American peregrine falcons in the West (Taubert et al. 1999). The Service works closely with State agencies in management of migratory birds. This Environmental Assessment is necessary to give full consideration to the proposal made by the States.

Issue. "Conspicuously missing in this [Need for Action] section is a discussion of the status of captive peregrine breeding programs. Techniques developed during the recovery effort have allowed breeders to successfully produce young peregrines, which are available to falconers for a price. How many birds are being bred each year by such facilities? Could falconers satisfy their desire - and it IS desire, not need - for a peregrine by obtaining one from a breeder? Why is this topic not a viable alternative to taking birds from the wild? The lack of discussion of this topic in the EA is a glaring weakness."

- "If they [falconers] want to hunt with a peregrine - let them purchase a captive bred bird."*
- "Although I have been interested in falconry for some time now I feel that the need for birds is more than filled by the current supply of captive birds. I would support some small number of captures, perhaps 2-3% as a means to provide genetic diversity for captive stocks, but no more than that."*
- "...we would like to note that captive bred birds are currently available for falconry and we question the need for take of wild birds." (State Agency)*

Response. We know that captive-bred peregrines are available. As with other species used in falconry, citizens should be allowed to take birds from the wild for use in the sport if the take will not harm the population. We are responding to the request by the States to consider take of wild peregrines. Though apparently all States do not agree on the need, the request for consideration of take of wild peregrines was presented to us through the International Association of Fish and Wildlife Agencies - on behalf all of the States.

Issue. *"It seems slightly inappropriate, except as a possible worst case, to consider U.S. anatum population biology as uninfluenced by immigration from neighboring subspecies (tundrius and pealei) and neighboring countries (Canada, Greenland, Russia, and Mexico); as well as any augmentation presently underway."*

Response. We have rewritten the relevant text to address this point. We agree that the American peregrine falcon population in the western United States may be influenced by immigration and emigration, both in the western United States and movement to and from other locations.

Issue. *Management scale.*

- *"We previously raised a concern about the statement that "it is most practical to manage American peregrine falcons in the western U. S. as a single population." We argued that a more conservative approach would be to manage peregrines in the west at the state level, or to manage them as regional subpopulations if that is warranted. It appears that the Service largely accepted that argument, since quotas for take are set by state using productivity data from that state. States desiring to increase take are required to provide documentation of increased productivity within that state. We concur with that approach, but wonder why then an average productivity for the western United States is used in the model justifying take? We believe take should be modeled (and justified) for each state using productivity data obtained from that state." (State Agency)*
- *"For example, any State in which take is allowed may employ models to assess population changes and the effects of take."...This indicates the USFWS is suggesting that states evaluate effects of falconry harvest. The USFWS should continue to provide adequate funds to the states, as it does for other migratory bird species in order to obtain the monitoring data needed to set harvest regulations on an annual basis."*

Response. Because peregrines are mobile and are found widely across the western United States, we believe it appropriate for the Service to manage at the large scale - as is done, for example, in management of waterfowl hunting. Managing at this scale also leaves much of the decision-making about management of take of nestlings for falconry to the States, as we believe is appropriate. Our intent in this assessment is to evaluate the take of nestlings for falconry proposed by the IAFWA - which was for the West. The calculation of take allowed in each State is based on the best data available, and is the maximum that would be allowed. Within that limit, the States should be free to be as lax or as restrictive as they wish.

Decisions to assess the effects of falconry take rest primarily with the States, but the responsibility to monitor is shared with the U.S. Fish and Wildlife Service. We do not believe the low level of take in the preferred alternative will even be detectable. As with other take of raptors for falconry, we

believe the take of American peregrine falcons under the preferred alternative will be of no consequence to the population.

Issue. *Calculation of allowed take.*

- *“WDFW proposes to establish an annual level of eyas take according to a rather simple procedure. The proposed procedure can be used with an ongoing monitoring program or in the absence of such a large-scale data collection program. We are proposing to use this strategy because we anticipate that many new peregrine territories will be discovered by agencies' staff, biologists, falconers, and bird-watchers, in the next 5 or 10 years until some level of carrying capacity is theoretically reached.*

Our data indicate that peregrine falcon pairs are present at about 80% of the known territories in the state each year. This value may change somewhat from year to year, but over a 5-year period it remains close to the long-term mean. For example, falcon pairs were present at 82% of the known sites between 1997 and 2001. Similarly, although annual mean productivity may vary, the long-term value is about 1.5 and the value for the period between 1997 and 2001 is 1.54. Because these values do not fluctuate greatly over time, we propose to use a 5-year running average of these values, as applied to the total number of known sites in the state. This will allow the formula for harvest to change, but only in response to marked changes that influence the 5-year running average. We believe there is no reason to establish the harvest level based on the previous year's productivity because productivity in the subsequent year is most likely independent of the previous year. Application of the procedure would be as follows: assuming for the sake of this example that there were 105 known sites in the state, the proportion of occupied sites would be $105 \times 0.82 = 86$. Productivity for that year would be $86 \times 1.54 = 132$. Further assuming a 5% level of take, the allowable number of eyasses that could be taken would be $132 \times 0.05 = 6.6$ (rounded to 7).

If we were able to continue monitoring efforts at a level that allows for statistically rigorous calculations of occupancy and productivity, we would use new data each year to modify the five-year running average. If this more rigorous level of monitoring is not possible, we will use occupancy and productivity data only from the most recent 5-year period (1998 through 2002). Consequently, if we have no new data for modifying the 5-year running average, but by 2006 we have increased the number of territories in our database to 125, the allowable level of harvest would be as follows (again, for the sake of this explanation using our current values of occupancy and productivity): (a) $125 \times 0.82 = 102.5$ active pairs, (b) $102.5 \times 1.54 = 158$ total young produced, (c) $158 \times 0.05 = 7.9$ eyasses (rounded to 8).” (State Agency)

Response. We agree that this procedure meets the intent of this assessment. As stated: “...any State in which take is allowed may employ models to assess population changes and the effects of take, and may implement take according to any guidance it develops.” This proposal is in keeping with this guidance. However, all calculations of allowed take should be rounded down to the next lowest whole number to ensure compliance with the take limitation.

Issue. *Productivity values.*

- *“The EA neglects to explain the methods used in each state to estimate productivity, or whether these methods are a viable and valid means of estimating productivity.”*

...The data presented in Appendix 1 are [sic] incomplete. Some states supplied no productivity or population data for some of the years included in the table. No explanation is given for the loss of nesting pairs in Colorado, Idaho, and New Mexico, or the reduced productivity in Colorado and New Mexico. According to the figures in the EA, these population and productivity losses have occurred since the falcon was removed from the endangered species list. This suggests that the Service should proceed with caution and delay consideration of this action until post-delisting monitoring is complete."

- "...the productivity information provided in the EA is skewed. Using an unweighted mean for productivity among the states results in a productivity figure that is higher than the actual average species productivity. State productivity data should be combined in proportion to each state's population, using a weighted combined state mean. Using this method, the average ($2822 \div 2070$) productivity is 1.36, somewhat lower than the 1.51 reported in the EA. EA, Appendix 1.

...the nesting pair and young values presented in the EA are not presented as normalized numbers based on a percent of aeries surveyed or other bias factors...they are presented as actual population numbers. Therefore, calculating productivity this way, [sic] gives a skewed picture of the actual average productivity based on the number of nesting pairs in the total area surveyed and the total young produced among all nesting pairs. If productivity is actually 1.36, based on the nesting pair and young produced data presented in the EA, a state would need 15 nesting pairs to produced 20 young (enough to take 1 at 5% take), not 14 nesting pairs as states in the EA."

"The "unweighted mean" productivity (as described on page 7) does not provide a representative estimator of overall peregrine falcon productivity in the western United States. The productivity of the entire western population is not the simple average of the productivity of each state. Rather, overall productivity is given by the total number of young produced by the western population (the sum of the number of young produced in each state, which is given by the product of state productivity and pair population) divided by the total number of western pairs. The simple average of productivity data by state (page 5, table 1) overstates the actual productivity of the population." (State Agency)

- "Two inconsistencies stand out between Table 1 and Table 2, which used productivity of 1.00 for Alaska instead of 1.54, and 72 pairs for Washington instead of 62. Whatever is correct, productivity was improperly calculated as a simple average of state productivities (p. 6), but Table 2 illustrates the proper method of calculating it. Because the entire population is the subject of demographic modeling, its productivity is the total number of young produced divided by the total number of pairs. Under the (invalid) assumption of the EA that reported pairs equals population, the number of young produced in each state was calculated properly in Table 2, and totaled 1794 (excluding Nevada). Dividing this number by 1418 pairs outside of Nevada (Table 2), yields an overall productivity of 1.27 young per pair, which is 16% less than the value of 1.51 used for demographic modeling. With this kind of uncertainty in overall productivity, it is hard to give credence to the claim that productivity could safely be reduced by 5% falconry take."

Response. We understand that the methods for determining productivity used by the States are the same as those used prior to delisting. Because those methods are based on site visits and not on actual aerie visits, they provide minimum productivity values.

When we asked for the states to provide population and productivity data, they did so in slightly different ways, and some States could not provide more current data. Thus, though the data in Appendix 1 are varied, they are the best data available.

We believe the 2001 productivity data for Colorado and New Mexico are due to natural variation in nesting success. In both cases, the productivity was more than sufficient to maintain the State populations, given our best estimates of survival.

In Table 2 in the Draft Environmental Assessment, we determined allowable take with the data available on nesting populations in western States. Data in that table were not accurate for calculating productivity because in it we used 1.0 for productivity in Alaska to calculate allowed take - as we understood the State to have requested.

We reevaluated the calculation of mean productivity. The 1.36 value calculated by one commenter also is biased because it is affected by data that came from States that could determine productivity more often. Thought this may be conservative, we changed the way the data in Appendix 1 are presented and the mean for productivity, and we reevaluated changes in λ with a more current value for productivity, which also happens to be 1.36.

Issue. Mortality values.

- *"The EA states that adult mortality is the most important factor driving the rate of change in peregrine populations, and that "the population could not show the population growth that the data provided by the States indicated" if adult mortality were 20% or more (Note on the EA). On pages 6-7, seven estimates of adult (post-first-year) mortality in the western states are given, and all but one estimate are greater than 20%. Two estimates are given for arctic peregrines and two for eastern peregrines. One of the latter deals with reintroduced populations on the east coast (Grier and Barclay 1988). The preponderance of data for western birds suggests an adult mortality greater than 20%; therefore the use of a figure lower than 20% for adult mortality does not seem justified."*
- *"My recent studies compared survival estimates from banding data with those from recording deaths among large samples of raptors radio tagged in the same areas. They showed that although banding tends to provide similar estimate to radio-tagging for adults, band recoveries overestimate mortality of 1st and 2nd year birds, in goshawk and buzzard by about 20% in total over the first two years of life. As a results, estimates of sustainable take from goshawk and buzzard populations are now much higher than the original 10-20% cited in the draft EA."*

The draft EA provides a thorough analysis of take of peregrine falcons that could be sustainable in the Western United States, carefully based on conservative estimates. Inasmuch as the adult survival estimates are reliable, I do not believe that a scientific case can be made against the take. However, as the juvenile survival estimate in the model is based on band returns, the scope for take may be substantially underestimated by the current model."

- *"Assuming age 3 for first breeding is conservative. Additionally, male peregrines in captivity remain healthy and viable much longer than females, frequently into their 20's. Since the information for average longevity in the wild is based on the more easily trapped and handled females, we believe these figures may continue to underestimate average longevity."*
- *"Peregrine populations are thriving throughout the western United States. I agree with statements in the EA that the perceived rate of increase clearly implies that mortality rates are lower than anyone might predict on the basis of band encounters or eyrie tenure. Average annual after-first-year mortality would appear to be in the neighborhood of 9-14 percent,¹⁰ [citation of R. Mearns and I.*

Newton 1984, Turnover and dispersal in a peregrine *Falco peregrinus* population, *Ibis* 126:347-355], and I think that juvenile mortality is likely lower than the 62.5% employed in the EA.”

- “Because pair numbers were not normalized by the number of territories surveyed, changes in reported pair numbers were misinterpreted as representing population change. Use of this so-called population change in demographic models to derive an adult mortality rate of 10.1% (as reported in the Notice of Availability but not the EA) was completely unfounded. This should be obvious from the unreasonableness of a 10% adult mortality rate, compared to no less than ten references to adult mortality rates ranging from 14% to 33% (pp. 6-7).”

Response. The published literature for peregrine falcons shows a wide array of post-first year mortality estimates, including some values much lower than those discussed. We believe the papers cited are relevant because they assess mortality for North American peregrines - many of which migrate to similar locations. We based our first-year mortality estimate on published information but we were intentionally conservative in picking a value for this assessment.

As stated in the Revised Draft Environmental Assessment, we concluded that with information from modeling efforts and actual population growth, a post-first-year mortality estimate of 20% must be too high for American peregrine falcons in the western U.S. at present. It is important to recognize that available estimates of mortality are based on band resightings and recoveries, and therefore do not readily differentiate between mortality and breeding dispersal. The estimates produced overestimate true mortality by the extent of dispersal, which ranges from 4% to 6% per year in published studies (White *et al.* (2002).

It is important to note that adult mortality and dispersal less than 20% has been documented and several well-designed studies. The comprehensive summary of peregrine biology by White *et al.* (2002) reported that research indicates annual mortality for adult migrants is probably 15% to 20%, and that mortality for residents is in the range of 10% to 15% per year. Thus, the adult mortality values in the middle of the range we modeled are consistent with current data on survival.

We do not believe it necessary to further evaluate the data on nesting populations and productivity provided to us by the States. In fact, though we recognize that part of the increase in nesting pairs might be due to increased survey efforts in some locations, survey efforts after delisting decreased overall. Therefore, it is very much more likely that the population increases reported are due to actual increase than to variation in survey efforts. Assuming otherwise implies that the additional nesting pairs reported always were present, but were not found.

Issue. *Population data on which the assessment is based.*

- “The manner in which the population data is presented in the EA makes it appear as if the data represents true population numbers, when it actually represents the number of known aeries. Exactly what percentage of total aeries and population the numbers represent, is not revealed. In addition the EA did not attempt to adjust the population numbers and the associated population growth for increased survey effort or survey area or other observation biases.”
- “The population growth numbers supplied in the EA may be an incorrect interpretation of the data. The manner in which the population data is presented in the EA makes it appear as if the data represents true population numbers when it actually represents the number of known falcons. In

addition, the EA did not attempt to normalize the population numbers, and the associated population growth, for increased survey effort or survey area, and other observation biases. Without normalizing the numbers, population growth estimates are unreliable as a basis for changing demographic parameters."

Without disclosing state monitoring and reporting methods, and without requiring a unified monitoring protocol, the Service cannot make a convincing case that various monitoring methods and efforts had no effect on the data reported.

...The data presented in Appendix 1 are [sic] incomplete. Some states supplied no productivity or population data for some of the years included in the table. No explanation is given for the loss of nesting pairs in Colorado, Idaho, and New Mexico, or the reduced productivity in Colorado and New Mexico. According to the figures in the EA, these population and productivity losses have occurred since the falcon was removed from the endangered species list. This suggests that the Service should proceed with caution and delay consideration of this action until post-delisting monitoring is complete."

- "We agree that the 10% increase in population is not the result of increased search effort. To the contrary the 10% increase in known eyries has occurred in spite of reduced search efforts. Many state are now only monitoring a percentage of know eyries with little or no search efforts since delisting in 1999."

"We disagree that any of the increase in population since 1998 is due to more search effort. In fact, our contacts with states indicate that search efforts have dramatically declined as endangered species funding is redirected toward other species of higher priority. The increase seen since 1998 is in spite of decreased search efforts."

- "Counts of nesting pairs for the Rocky Mountain states, and Utah and Arizona are necessarily incomplete because of the size and inaccessibility of terrain suitable for nesting peregrines. In the period of population growth and recovery, 1980 onwards, the increase in known pairs was due to actual population recovery and also to search effort. In the above states the actual populations very likely is [sic] half again or more the numbers appearing in Table 1. Further, the known population sizes for NM and CO in 2001 are very conservative because of interpretation, and field effort. The 37 pairs in NM were apparently pairs actually counted that year; the total number of pairs seen on territory in recent years was at least twice that number. Similarly, pairs of peregrines have been seen on more than 125 territories in Colorado in the last few years, but only 96 could be visited in 2001. The point to be made is that the counts in Table 1 are not population estimates. Actual populations are certainly much larger."

"The number of pairs known in New Mexico during 1998 and 2001 (page 5, table 1) only represents the observed sample size during those particular years. The numbers depend on both survey effort and survey area, but do not have any direct relationship to the size of the population. Therefore, it is not valid to calculate population change from these numbers." (State Agency)

- "Another deficiency with the population data is that none of it comes from peer-reviewed or published sources, but from personal communications with (what we assume are) wildlife resources personnel in each state. The EA lacks information regarding the qualifications of or position held by the people supplying the population data."

- "Pair count change was assumed to be zero, but is really unknown in 3 states with 46% of the 1998 pairs. Moreover, effects of an acknowledged larger survey area on pair counts in Alaska were not quantified, and no attempt was made to quantify survey area changes in the other states. Contrary to the expressed belief that a "small amount of this increase is likely due to increased search effort" (p. 10), survey area is more relevant than search effort, and effects of increased survey area have not been quantified. The fact that numbers of pairs in Idaho and New Mexico decreased by 10 (15%) from 2000 to 2001 (Appendix I), indicates that the number of territories surveyed may vary substantially from year to year. (Over a longer period, this number dropped from 167 to zero in Arizona and to 36 in California!) Pair counts should not be confused with true population data. With no data for nearly half the reported 1998 pairs, and no attempt to quantify survey area, population changes during 1998-2001 are completely unknown."
- "...it should be clear by now that the available data are not sufficient to support a firm analysis. All falconry take should be deferred until sound, consistent data are gathered through post-delisting monitoring, provided those data then prove that the population can support take. This draft EA does not make [sic] the case for permitting any take."
- "The current model provides a modification of vital rates to bring it in line with observed population increases. The model also modifies calculations to incorporate breeding of 2-year olds and to address 'losses' due to emigration rather than mortality. Finally, the model was revised to predict effects of density dependence at Moffat's equilibrium. All of the considerations contribute to the biological realism of the model, which is an improvement from previous drafts. We suggest that compensation for emigration (dispersal) should involve younger birds rather than older birds. Post-breeding dispersal by adults is not documented, however natal dispersal is an acknowledged mechanism for repopulation of previously abandoned areas. We expect that apparent mortality overestimates true mortality in first and possibly second year, peregrines. In contrast, there are not data to suggest that older birds disappear from the local population except by death, therefore, we suggest that the Service return to the use of at least 20% annual mortality for post-first-year birds, with increased estimates of first-year survivorship instead."
- "Assuming age 3 for first breeding is conservative. Additionally, male peregrines in captivity remain healthy and viable much longer than females, frequently into their 20's. Since the information for average longevity in the wild is based on the more easily trapped and handled females, we believe these figures may continue to underestimate average longevity."

"Population estimates based on known number of pairs almost certainly are shown to have artificially increasing trends by increasing the survey area or effort, as occurred in USFWS's analysis of New Mexico data... Therefore, for USFWS to utilize within its demographic modeling any estimate of adult mortality other than the best literature estimate of 20% (page 8), requires great confidence that contributions of an increasing search area are small (page 10). Since all model estimates using 20% adult mortality result in a lambda value slightly below 1.0 (appendix 2), and since 20% mortality appears to be a reasonable parameter, the case for allowing take of peregrine nestlings requires careful consideration at the given productivity rate of 1.51, and with the given 62.5% first-year mortality. Also, the percentage change in lambda is not so important as the difference between lambda and 1.0, which determines whether a population is increasing or decreasing. This helps to illustrate the critical importance of using appropriate and representative parameters, which should be specific to the population of interest, when analyzing the potential impacts of falconry take on peregrine populations within a given state or other area." (State Agency)

"...it is irrelevant to report demographic effects of falconry take on the population as percentage changes in the parameter λ without stating a current value for λ . What matters is the value of λ minus one, which quantifies population change. Effects of any level of falconry take are completely different if λ decreases 1% from 1.10 (reducing growth to 9%), or from 1.00 (causing a 10% population decline). By failing to quantify λ , the EA has utterly failed to document effects of its alternatives on the population. The fact of the matter is that λ is unknown, because available data are insufficient to determine it. Under this reality, all the demographic modeling in the EA is only window dressing to an expectation of "continued growth in the population" (p. 11), and an unsupported belief that reduction of productivity by 5% would not change this expectation. This expectation may be valid or not, but the point is that it is not supported by firm data."

Response. We agree that the State populations probably are larger than those we reported. However, this assessment was based on the numbers provided to us by State natural resources agencies or by people to whom we were directed by State agency personnel. We believe those data are based on the same survey methodologies used before delisting, which provided peer-reviewed and endorsed data (Millsap et al. 1998). We did not and do not claim that the numbers represent all aeries in the western United States. They also are the best data available. We do not know how we could determine what proportion of the total aeries these numbers represent.

We disagree that the change in λ is not as important as the difference between λ and 1.0. Determination of the exact value of λ for the western United States population is not possible without more detailed information about survival than is available in the scientific literature - in particular without simultaneous survival and productivity data. However, the number of known nesting pairs in the western U.S. clearly has grown in recent years. That change and changes in the number of peregrines seen in migration indicate substantial population growth. We believe that the available population data clearly support the conclusion that λ is >1.0 . With population growth demonstrated by the data, our task is to determine the effects of take - that is changes in λ if take is allowed.

As noted elsewhere, the actual value of λ is not the focus of these evaluations. λ varies with locale and year due to many factors, but data from the States make it clear that the American peregrine falcon population in the western United States has grown substantially since delisting. It is not necessary to know the actual current value of λ , but the indicated growth of the American peregrine falcon population in the western United States provides strong evidence that λ has been above 1 since delisting. The focus of this assessment is the likely change in λ if take of nestlings is allowed. Our intent was to evaluate different levels of take with the most accurate population and productivity data available. Our evaluations make it clear that the limited take proposed by the States will not significantly change the demography of the American peregrine falcon population in the West.

We do not view the issue of increased or decreased survey effort as critical for this assessment. In many cases, surveys were reduced after delisting, and it probably is more correct to state that new aeries are reported by interested individuals rather than through increased survey efforts. What we view as important is that the actual number of known nesting pairs has increased substantially since delisting.

We disagree with the assertion that dispersal by adults is not documented. White *et al.* (2002) reported that "Known movements of females to other sites (i.e. divorce) account for 10.3-18% of turnover."

We disagree that normalizing the data is necessary to assess whether the population has grown. Even with reduced survey efforts, the data provided by the States make it clear that the number of known nesting pairs of American peregrine falcons in the western United States has grown since delisting.

We believe the nesting population data for Colorado, Idaho, and New Mexico in 2001 (to which the commenters referred) are the result of annual variation in nesting, which is common in peregrines (Newton 1988). Though there were lower numbers of nesting pairs in those three States, there were increased numbers of nesting pairs in other States in the same years.

The current data for the nesting population in the western United States (Table 1, Appendix 1) continue to show an increased American peregrine falcon population. However, even under the best circumstances, not all States in the West will have complete data every year. We did not use the State data to calculate population change; we simply presented the data they provided as minimum values for each State. The data in Appendix 1 simply represent our best estimate of the minimum number of nesting pairs and the most accurate productivity data we can gather. Though the same data may not be available for every State every year, we will continue to try to determine the status of the population based on the best available data, as we have here.

The sources of State population in all cases were State biologists or people to whom we were referred by those biologists. Those sources were indicated in the "Consultation" and "Sources of Current Population Information" sections. Data they provided were, to the best of our knowledge, gathered using the same methods used prior to delisting. Thus, they are the best comparison with earlier data. We do not believe that peer review of nesting pairs and average productivity numbers is needed.

We believe we have been very conservative in our evaluations of the effects of take. Though the data from the States are not consistent, we have assumed a cautious position on each aspect of the evaluation - particularly regarding State population information. In particular, for the draft assessment we assumed no population growth in three States in which populations are now likely much larger than they were at delisting.

We disagree with the assertion that our presentation of data artificially increased the apparent population. We did not analyze the data provided by the States, other than to try to use it to determine a value for productivity, and as a very coarse gauge of population change. We assumed that the numbers provided by the States were minimums for the known number of nesting pairs in each year.

Our determination that post-first year mortality must be lower than 20% per year was based on modeling that indicated that it is almost certain that our earlier estimates of post-first-year mortality were too high. This is supported by the best available data on mortality (White *et al.* 2002).

Issue. *"It would have been reassuring to have mentioned that under some circumstances, take of nestlings for falconry purposes might actually be beneficial, by increasing adult survivorship and lifetime productivity. At least some studies (including one falcon study) of optimal clutch and brood size in birds suggest that increased brood size increases adult turnover and decreases fertility (see review in Partridge, L.1989. Lifetime reproductive success and life-history evolution. Pp. 421-440 in I. Newton, ed. Lifetime reproduction in Birds. Academic Press, New York). This may be because increased foraging and nest defense behavior exposes adult falcons to greater risks of predation or accidental death."*

Response. We agree that increased survival of remaining nestlings in an aerie after one is removed is possible.

Issue. *"In Peregrine populations the only 'density dependent' response so far documented involves the mean age of first breeding as mentioned above, which declines in decreasing populations, and rises in increasing populations. However, other demographic variables (such as nest failures and mortality rates) may also decline in response to the removal of a small proportion of young. Such density-dependent changes are not allowed for in the USFWS models (EA report, page 6) but, by analogy with other bird species, they might well occur and further reduce the effect of a harvest on population levels."*

Response. We agree. As noted earlier, we intended the population values and evaluation of effects in the EA to be very conservative so as to protect American peregrine falcons in the West.

Issue. *"We also note that when peregrine populations crashed, the crucial factor was not adult mortality, but rather lack of reproductive success due to pesticide contamination and subsequent eggshell thinning. In that case the failure of reproduction was the crucial factor."*

Response. The chief cause of the decline in peregrine falcon populations in North America was chlorinated hydrocarbon pesticides that affected reproductive success. However, in a healthy population unencumbered by anthropogenic contaminants or killing of adults or juveniles, adult survival is the key factor in maintaining the population.

Issue. *Breeding Age.*

- *"The EA notes that while peregrines are 'capable of breeding at age 2,' this age is 'younger than the average age of first breeding' (EA,5). The EA also states that 'younger birds are not often as successful as older breeders' (Ibid.). In the 2001 EA, using [sic] age 3 as the age of first breeding to model population change due to falconry was deemed conservative. Now, without any studies confirming that peregrines actually breed at age 2 in any significant numbers, particularly in the West, the 2003 EA claims that using age 2 as the age of first breeding is conservative. It is unclear from the EA how changing the age of first breeding from 3 to 2 is a conservative measure.*
- *"Assuming age 3 for first breeding is conservative. Additionally, male peregrines in captivity remain healthy and viable much longer than females, frequently into their 20's. Since the information for average longevity in the wild is based on the more easily trapped and handled females, we believe these figures may continue to underestimate average longevity."*

- "...Peregrine populations will actually grow faster than was indicated in the environmental assessment due to the fact that they reproduce earlier than three years old, which is the age used in the assessment."
- "The Revised EA includes a major error. In the Midwest, 1987-1992, about 11% of the nesting pairs had at least one member that was a one-year-old, not a two-year-old. More recently, yearlings comprise less than [sic] 2% of the nesting population. This error tends to play down the role two-year-olds have in reproduction. This age group breeds in significant proportion in expanding populations. After all, they are more numerous than any other adult age group. If older adults do not hold the territory, two-year-olds are fully capable of breeding."
- On page 11 (second paragraph), the draft EA erroneously refers to subadults as "two-year-olds." The sentence reading '...about 11% of the nesting pairs included at least one two-year-old bird' should read '...at least one subadult.'

Response. We believe that it was clear in the rest of the text and in the appendices that we evaluated population growth under the assumption of first breeding at age 3. We have revised the EA to make this point more clear and to correct the language about nesting pairs in the Midwest. Peregrine falcons typically breed at age 2 (in their third year). We revised this assessment to evaluate the effects of take assuming different proportions of American peregrine falcons breeding at age 2.

Issue. "Another change in this document that improves biological realism is the modeling of breeding by 2-year olds. While biologically realistic, this is not 'conservative' compared to the original models because it can increase but not decrease lambda. If Appendix 2 is accurate, the values for lambda have not changed from previous drafts. The comparison of lambda for different proportions of breeding 2-year-olds shows no important change in lambda. For illustration purposes, we recommend leaving the breeding 2-year olds in the model and Appendix results, noting that an increase of up to 40% of 2-year olds breeding has no detectable effect on population growth estimates. Therefore we suggest using the conservative version of the model with 0% 2-year olds breeding." (State Agency)

Response. We agree with the assertion about modeling with different proportions of 2-year-old birds breeding. Readers can compare the differences in λ , with different proportions of 2-year-old American peregrine falcons breeding.

Issue. "The EA claims that peregrine falcon populations "can sustain 10%, and potentially 20% annual removal of juveniles by falconers" based on a paper by Kenward (1997). However, Kenward's paper is not clear on the sources it used to make the determination that healthy peregrine populations can sustain a 10% annual removal of juveniles. It is unacceptable to cite a study that fails to cite clear sources and rely on this study as a basis for determining that certain levels of take will not have negative impacts on the population. In general, many estimates and scientific justifications throughout the EA are unvalidated and inapplicable. Such a lack of thorough analysis calls into question the agency's assessment of the impacts on the species."

Response. The Kenward (1997) paper was only one part of the basis for our work, and we did not base our decision on it. Our modeling made it very clear that small changes in productivity, whether due

to natural causes or take for some purpose, have a very limited effect on the population - an effect that is undetectable and negligible in a healthy population. This is demonstrated by the evaluation of λ in Appendix 2, which makes it clear that Kenward's (1997) assertion is correct. In a growing or stable peregrine falcon population there is a large proportion of immature birds and "floaters" adults. Removal of a limited proportion of nestlings produced will not reduce the nesting population because floaters are present.

Issue. *"The EA also claims, without citation, that 'lowered production of fledglings has very little effect on the rate of population change. The driving force in maintenance of the population is adult survival.' This is contradictory to information in the 2003 Draft Monitoring Plan, which states '[t]erritory occupancy, nest success, and productivity all are indices of population health.' The information in the DMP appears more accurate because without maintaining or increasing the fledgling rate, there will eventually be no adults to survive. Therefore, each of these indices is critical to population health, contrary to what the EA claims."*

Response. No citation for the claim is necessary because the modeling in the assessment is the basis for the statement.

The statement in the Draft Monitoring Plan is correct. Territory occupancy, nest success, and productivity are all indexes of population health. We agree that it is important to have reproduction sufficient to maintain the population - which it clearly has been in the western United States. However, small changes in productivity have a very small effect on the population compared to similar changes in adult survival. Thus, we believe that our statement that adult survival is key in maintaining the population is correct.

Issue. *A large majority of the respondents favored selection of Alternative 3 - allowing take of 10% of the nestlings produced.*

- *"...a take at the 10% level would be more prudent given the conservative population and survival estimates in the EA."*
- *"... I am aware it is close to impossible to know where all the nests are and that estimates of the young produced are usually low. By limiting the harvest to the known young, the proposal severely limits the harvest th numbers below the percents allowable in the take protocol. Because of the reasons above, plus the fact that not all permitted falconers will take peregrines, and because not all states will allow peregrines to be taken a 10% harvest is still below the point of having any detectable effect on the population."*
- *"A controlled take of this species is warranted; 10% is the minimum conservative level of take justified by the data and scientific literature."*
- *"All survey information presented supports a controlled take above that which has been suggested by the FWS... The numbers, however, support a 10% harvest (Alternative 3)."*
- *"A 10% harvest is conservative by all scientific perspectives, and should be a starting point from which to gauge the management of this precious, and hard-fought-for resource."*

- It is time for the USFWS to step up and acknowledge the real biology of peregrine falcons. Based on this biology, it is clear that a take 10% [sic] of the known population of young birds would have no impact on the wild population.
- "All the scientific data indicates a 10% harvest is safe."
- "The current biological reality is that the peregrine falcon is no longer an endangered species. In fact, the known population of peregrines is now more than twice the original recovery goal, and is healthy and growing. Your own data supports this and other information that soundly argue that the 10% take figure is a sustainable number."
- "As is noted in Table 2, most Western states will likely prohibit take in 2004 even if a 5% take is approved. Thus, the actual impact of harvest on peregrine populations will be considerably lower than whatever value FWS provides. Setting a 10% maximum level on take might allow states such as Utah and Arizona with robust peregrine populations to provide greater opportunity to both residents and nonresidents wishing to experience take of a wild peregrine for falconry."
- "...based on what might be considered very conservative government statistics, facts, figures and population surveys this proposal appears to comfortably ignore the real situation and thus doesn't go as far as it should."
- "It's obvious the population can withstand a 20% harvest, but 10%, alternative #3, should be acceptable to all. 10% would have no significant or noticeable effect on populations. 5% is much too low."
- "I reiterate my conviction that your recommended 5 per cent (Alternative #2) harvest is needlessly conservative. I recommend you consider Alternative #3; after all; that can always be changed if data suggest more of an impact on population growth than you project. BUT, we are, after all, talking about a population which has grown faster than your projections, in which there are many documented cases of first-year or second-year breeders, and in which you assumed post first year mortality is probably too high. I send that it will be difficult to detect the difference in effect on population growth rate between a 5% and a 10% take. In fact, my honest opinion is that the harvest should be set at 20%. The whole basis for your determination is the rate of growth of the population. I submit to you that the western anatom peregrine falcon, as it nears the carrying capacity of nest sites and prey availability, will show a leveling-off of the growth curve, which is a natural phenomenon, and not cause by any harvest that you might recommend. So, what I caution in this case is that growth rate in a healthy population can be affected by natural factors, and must be recognized as such when trying to assess a change in that rate attributed to a harvest of young.

...I believe Alternative #3 is both realistic and supportable. I believe that a 20% harvest is equally realistic and supportable."

- It is my strong opinion that a take of 5% of the nestling peregrines per year will have no detrimental effect on the health of the peregrine population. For example, if 8 nestlings were taken in Colorado each year, the loss would be equivalent to the total natural loss of 2-3 broods among the 70 or so produced each year by known pairs. Year-to-year variation in brood loss is usually several times larger than that; the loss due to take would be lost in the "noise" of natural variation. I feel a take of 10% of nestling [sic] from known pairs would not interfere with the current robust western population

and would not impair further expansion. This is because the real population is clearly much larger than the counted pairs."

- I supported the preferred alternative under the circumstances of a recommended initial harvest plan to be implemented by the states. However, given the dynamic increase which continues in population trends across the western states, the higher percentage alternative of 10% must be considered for a more appropriate harvest level. The difference in the increasing population trends as seen in Table 1 (EA 2 at 5) is incredible."*
- "Based on the data presented we believe that the harvest level is overly conservative even with prudent and conservative estimates of the present population of the anatum peregrine. Based on the dramatically increasing numbers reported since the first EA presented in 2000, we believe that percentage needs to be increased to 10%."*
- "An eyas take of 15% is overly conservative. I believe a 25% to 50% eyas peregrine take is biologically supportable."*
- "I support a controlled harvest of 5% to 10% of nestlings. I would support a 10% harvest only because the states can adjust the harvest according to local populations. Also, the parameter estimates used to model the Peregrine Falcon's current population numbers were fairly to highly conservative. Therefore, the actual population is probably considerably larger, and could easily sustain a take of 10% of nestlings."*

Response. We intended the population values and evaluation of effects in the EA to be very conservative so as to protect American peregrine falcons. Though we agree that take at the 10% level likely would not harm the population, we concur with the recommendation from the States to allow take of no more than 5% of the nestlings produced.

Issue. Many commenters pointed out that some birds taken for falconry will be lost by falconers. Many also pointed out that such birds (1) will have survived a period of high natural mortality and (2) may be better able to survive than they might otherwise. Take will essentially be minimized because some birds will be lost or returned to the wild with developed hunting skills.

- "By allowing a percentage of first year peregrines to be used in falconry, this will allow for both a recreative [sic] opportunity and later some falconry birds will be returned to the wild through release or loss with potentially more survival skills that they had in their first year."*
- "Naturally falconry birds are lost permanently by falconers from time to time. The EA 2 should assess the impact of the lost birds on the population numbers. Some lost falconry birds are recruited into the wild nesting populations, notwithstanding the personal communication of Mr. Bruce Taubert urging that harvested birds be considered removed from the population permanently. (EA 2 at 7).*

We disagree that all falcons taken for falconry are permanently removed. We urge the Service to consider the scientific information suggesting that the fitness and documented recruitment of released/escaped raptors can reduce the effective take."

Response. We agree that some peregrines taken for falconry may be lost to the wild and may be productive. However, for the initial assessment of take of anatum peregrines, we concur with

Taubert *et al.* (1999) that we should consider birds taken for falconry as permanently removed from the population. If sufficient data on the survival of lost or released peregrines become available, we may reevaluate this position.

Issue. *"This [Environmental Consequences] section neglects to mention any possible effect on illegal take of wild peregrines. By "illegal" we mean not just the taking of birds by unauthorized parties, but also the take of birds outside the specified time period, take of birds that are younger or older than the age specified in regulations, take of birds without leaving at least one young in the nest, or take of chicks of just one gender."*

Response. We have no reason to think the issues raised will be significant if any State allows take of nestling American peregrine falcons. As noted in the "Management of Falconry Take" section, take will be reviewed each year and conditions for take adjusted, if necessary. Any take of nestling peregrines not authorized by permit will be a violation under the MBTA, and such violations will be considered for appropriate law enforcement action. All American peregrine falcon nestlings taken from the wild will have to be banded, and every person taking a nestling from the wild will need an amendment of his or her permit to be allowed to take a nestling. We do not believe that allowing take will increase the opportunity or likelihood of illegal take of nestlings. Violations of MBTA protection of American peregrine falcons will still be subject to prosecution.

Issue. *Falconers should be rewarded for their efforts in restoration of the peregrine falcon population.*

- *"From the beginning, the falconry community has played a critical leadership, knowledge-source, and labor-force role. Falconers were among the first to notice the decline and sound the alarm. Falconers were also the quintessential pioneers of captive breeding in raptors, and particularly the peregrine, as well as the source of healthy breeding stock at a time when such was nearly unobtainable. Falconers has provided both the knowledge and labor in efforts such as artificial insemination, incubation, rearing and release (hack-site management). Though it has always been a privilege for the falconry community to play a vital leadership role in the recovery of the peregrine, one cannot ignore that there has been an implicit understanding from the beginning of this effort, that at such time that the peregrine reached full-recovery levels, the falconry community would once again be permitted to access the wild peregrine population as it unparalleled and irreplaceable source of nature's finest denizen and falconry's finest citizen."*
- *"The time has come for the people of the United States, through their government, to recognize and reward a group of citizens, the falconers, who have spent a generation in the unceasing pursuit of doing the right thing."*
- *"Hopefully, this proposal was presented in recognition of the devotion and support the falconry community has shown to the environment. They have been the doers."*
- *"By allowing a take those most responsible for the peregrine's recovery (falconers) would be rewarded."*
- *"It is evident that allowing a 10% take from the know [sic] population would minimally (undetected) affect the wild population. The falconry community has on [sic] the forefront of repopulation of birds of prey in the wild. I feel that this is a very good way to return the favor."*

- "I am intimately aware of the tremendous contributions made by the falconry community toward the recovery of this species. If not all members of the community have individually contributed, there are a few indeed among those instrumental in the species recovery who are not affiliated with the sport. In other endangered species had a constituency anywhere approaching this body of dedicated peregrine fans, those species would not be in as dire circumstances today. The falconry community does not seek unrestricted access to these birds, just an HONEST opportunity to do under [sic] REALISTIC constraints. They have more than clearly demonstrated they deserve such."
- "It must always be remembered that the Peregrine Falcon was brought back from near extinction by the efforts of captive breeders and NOT the USFWS. It would seem that the individuals who are breeders of Peregrines have been completely ignored."
- "Though maybe not scientific, I also believe that without scientist-falconers like Cade, Burnham, Weaver and dozens of others there would be no peregrines for anyone to see. It seems just that Weaver could take a wild peregrine as a reward for a lifetime of dedication to their survival."
- "Current scientific data supports a take of 10% would have no negative impact on the population. It is clear that politics rather than scientific data continue to play an ever growing role in wildlife management. We need strong leadership by our wildlife managers. Allowing a controlled take of peregrine falcons in the U.S.A. would demonstrate the USFWS's ability to properly manage our renewable natural resources."
- "The recovery of the peregrine is a fine example of what can be accomplished when parties of like interests work together. I feel it is time to allow the falconer to take peregrines, for without him, the recovery would still be years away."
- "It should be recognized that falconers have been very instrumental and contributive to the peregrine population recovery."
- "Over the past 3 decades falconers have been the crucial factor in the recovery of this species and breeding stock from nestling falconry birds were a big factor in establishing a productive captive breeding population to repopulate many areas in the wild."
- "Please help falconers as they have actually abated the extinction of peregrine falcons."
- "Allowing on 5% would be a stingy reward for the group that did the most to bring back the population."
- "This is to confirm my wish that falconers be allowed to have access to wild peregrines. As science tells you, falconer impact on populations of peregrines would be completely negligible."

It's time to once again reaffirm that sound science rules over the emotional and political "anti-s". It not, wildlife policies are doomed from the start. The anti's must be shown that their surface oriented, non scientific thinking will not have purchase.

Finally, who could not more richly deserve access than falconers, who in reality, w/ their expertise, knowledge, and caring mad [sic] the news making and biological triumph of "return of the peregrine" possible?"

- *"...although falconry played no role in the peregrine's decline, the resurgence of the peregrine falcon population nationwide was due in no small part to the efforts of the falconry community.*
- *"It's time falconers have a chance to reap some of the rewards for their efforts in restoring these birds to the wilds of America."*
- *"The base knowledge of raptor husbandry in zoological parks, scientific research endeavors, educational programs, rehabilitation centers and veterinary medicine all have [sic] roots in falconry. An excellent example of this is the "Peregrine Fund's" use of breeding stock and propagation techniques from falconers to help save this bird from extinction. Allowing the use of wild harvested Peregrine eyass [sic] in the field by licensed falconers will greatly increase the current database of knowledge about this bird."*

Response. We recognize that falconers and propagators made many valuable contributions in the recovery of the peregrine, including giving up falconry birds for captive breeding efforts and providing expertise in captive breeding and reintroduction efforts. However, our task is to evaluate the effects of take on the population. Our assessment is based on the best available scientific data.

Issue. *"Another concern is the importance of adequate post-delisting monitoring as required by the ESA. It seems like the states will be less and less inclined to devote resources to monitoring peregrines now that the species has been delisted. This will set the stage for increased dependence on low-budget population surveys involving knowledgeable raptor enthusiasts including many members of the falconry community. The relationship between harvest limit and total active eyries actually provides an incentive for falconers to go out, look for, and report undiscovered eyries to state agencies. A system of regulated harvest of nestling peregrines also creates an incentive for falconers to be intolerant of any unethical falconer or other individuals who might be tempted to disturb and eyrie and/or take peregrines without legal authorization."*

Response. We agree that post-delisting monitoring is critical, and prior to completion of this Revised Environmental Assessment, a monitoring plan that had been subject to considerable public review was implemented. We also agree that the need for comprehensive surveys may provide an incentive for skilled and knowledgeable individuals to assist in peregrine falcon population surveys. We hope that ethical behavior in take of nestling American peregrine falcons will be the standard for individuals in the falconry community.

Issue. *"Also in this [Environmental Consequences] section, a passing reference is made to impacts on "nonconsumptive uses of peregrines such as avocational birdwatching. We would like to remind the U.S. Fish and Wildlife Service that these birdwatchers, and other nonconsumptive users, paid for Endangered Species Act spending and grants of that money to the States for their peregrine recovery programs. Granting a very few falconers the right to possess members of a species on which millions of dollars of other people's money have been spent is morally questionable, and we wonder if the Service really wants to abandon the moral high ground on this issue to pander to this extremely small group."*

Response. It is correct that support for recovery came from a variety of sources, including Endangered Species funding. People who might wish to take peregrines for use in falconry also helped pay for

the species' recovery. However, we do not believe there will be any significant effect on recreational activities or on the American peregrine falcon population itself from the proposed action.

Issue. "The EA also lacks a discussion of cumulative impacts on peregrine falcons caused by incidental or unintentional take, permitted take for other purposes such as science and propagation, take resulting from activities such as recreational rock climbing, land use activities, and building and bridge maintenance, and possible impacts of the West Nile Virus (both directly on peregrines and on populations of prey species). The EA states that the Service will "continue to review new data on cumulative impacts" (EA 10), but NEPA requires disclosing cumulative impacts during the decision-making process, not at some unspecified future date."

"Although the EA recognizes that activities such as recreational rock climbing and land use activities may affect peregrines, it dismisses these effects out of hand. The agency believes peregrines have recovered sufficiently to be removed from the endangered species list despite the continuing nature of these activities. However, as more and more suitable nesting areas are lost due to disturbance from land use and recreational activities, the effects on peregrines are likely to increase. Land use decisions including, among other things, logging, mining, and urban sprawl, may also affect prey species that falcons rely on for survival. In addition, the EA fails to analyze the potential for incidental take due to climber accidents, incorrectly timed harvest, and nest site disturbance and their associated effects. The EA states that the FWS will "continue to review new data on cumulative impacts," but NEPA requires disclosing cumulative impacts during the decision-making process, not at some unspecified future date.

- "By the agency's own admission, unintentional take associated with take of peregrines for falconry is possible. Yet, unintentional take is not taken into account in any of the modeling or population change estimates."
- "The discussion on page 10 about unintentional take associated with the proposed action is worth considering. It has been our experience that banding attempts can, and have, led to premature fledgling [sic] (with undesired consequences) of nest mates. Falconers seeking to take nestlings for falconry are likely to have a negative effect beyond their actual removal of nestlings. We hope that you will further strengthen the Implementation of Take guidance, which we think was generally very good and necessary." (State Agency)

"While the "take" of individuals may be negligible, the possible impact due to nest site disturbance may be significant to local peregrine populations. This could be a larger issue if falconers access multiple territories before "taking" an eyas. Also, some sites may be visited on sequential multiple occasions to take eyasses and cause disturbance to breeding birds. Specific details of the state's permit procedure will need to address this." (State Agency)

- "There is no mention of a procedure by FWS to monitor the impact, if any, of the implementation of the falconry harvest on peregrine population parameters. Conway et al. (1995) observed lower return rates of adult prairie falcons from harvested territories compared with non-harvested territories and therefore harvest may decrease territory fidelity. This may appear to be a negligible impact on a state's population, if it does occur, due to the limited number of eyasses that may be taken in any given state. Falconers climbing into an eyrie could cause abandonment of the territory in following years. The USFWS should implement a study design to evaluate falconry harvest as part of the federal monitoring plan. This study should evaluate the potential impact of eyas harvest, if any, on

subsequent territory occupancy, nesting success, productivity and rates of return for adult breeders and locally fledged young.

- *"The DEA needs discussion of how falconry harvest will be evaluated as part of the overall federal monitoring plan for this species following de-listing. Wording to this affect is included in the Federal Register (Volume 64, Number 164, pages 46541-46558), "The management plans (eyas and passage bird harvest) will include criteria for harvest. , and procedures for evaluating effects of harvest. The effects of take for all purposes will be assessed during the monitoring period following de-listing." (State Agency)*
- *"Although falcons with nestlings tend to be resilient to human disturbance, it might have been useful to provide some reassurances here with data on rates of abandonment of eyries caused by researcher activities. In this regard, Ian Newton, and others have employed techniques in UK have included trapping females on eggs for purposes of radio- tagging or marking them; i.e. researcher activities have been very invasive, in fact sometimes much more invasive than a typical falconry-oriented nest visit to obtain nestlings."*

Response. We outlined the cumulative impacts we foresee from the proposed action in the "Cumulative Impacts" section. Incidental take of peregrines occurred during recovery, as did activities such as logging, mining, rock climbing, and building and bridge maintenance. Because productivity data were derived from the periods during recovery and after delisting when such activities were occurring, the evaluation of the proposed action was a cumulative assessment of all impacts to the population if take of nestlings for falconry is added. The indicated American peregrine falcon population in the western United States has continued to grow since delisting. We see no reason to delay management actions until the completion of monitoring. In fact, the argument can be made that such actions should be taken while monitoring is ongoing.

We strongly disagree that the Service should "...implement a study design to evaluate falconry harvest as part of the federal monitoring plan." The level of take of nestlings proposed by the IAFWA and selected as the Preferred Alternative is so low that its effects could not be seen under any population monitoring scheme. We agree with the assertions about possible reduced aerie fidelity and possible multiple visits to individual aeries if a State allows take of nestlings. We added language to the Management of Falconry Take section to make it clear that such problems will be addressed by the Management Team.

We will address the cumulative impacts from scientific collecting or propagation permitting if we consider significant permitting of these activities. They have not been addressed since delisting, and no permitting for those activities is planned. One or more Environmental Assessments might be required if we consider allowing substantial take from the wild for scientific purposes or for propagation.

Issue. Pesticides.

- *"Another shortcoming is the EA's failure to analyze the effects of pesticides that persist in our environment and remain legal in this country... The Service should wait until post-delisting monitoring, particularly of contaminants, is complete before considering take of falcons."*

- "... the EA acknowledges that persistent pesticides were "the largest single cause of the peregrine population decline." However, the EA is devoid of any analysis regarding the effects of pesticides that persist in our environment and remain legal in this country since DDT was banned, as well as the effects of DDT (still used by many other countries) on the species. The 2003 Draft Monitoring Plan for the Peregrine Falcon notes, "[l]ocal and regional data document the presence and effects of persistent chemical compounds in North American Peregrines." The birds' "exposure to DDT and other pesticides in wintering areas may pose a risk long after banning these pesticides" in the U.S. In addition, the DMP acknowledges that there "has been no systematic nationwide effort to monitor exposure of peregrines to chemical threats" and that "the continuous introduction of anthropogenic chemicals to the environment far outpaces research on their effects on wildlife." Based on the unknown effects from pesticides and other environmental contaminants and the lack of research on these effects, the FWS should wait until post-delisting monitoring, particularly contaminant monitoring, is complete before contemplating take of falcons, which may be sensitive to a number of factors not analyzed in the EA."

Response. The American peregrine falcon population in the western United States recovered very well even though there are localized concerns about contaminants. Pesticides concerns are addressed in the post-delisting Endangered Species monitoring plan. Concerns related to pesticides will be addressed by the Management Team, should they arise, during the post-delisting monitoring period. This Environmental Assessment is intended to consider the effects of take of nestlings for falconry as an impact in addition to other extant concerns, such as pesticides.

Issue. The recommendation for take of young from high-risk nesting sites was debated.

- "...new structures that are manmade cover the landscape [in southern California] and provide suitable breeding sites for a peregrine falcon population that continues to grow - possibly beyond the historic level that was limited by breeding site availability... Many bridges in the state are host to nesting peregrine falcons. In most cases, these young from the bridge and building nests fledge to their deaths into water or the urban landscape. Young rescued from these nests for use in falconry would more than satisfy the 5% allowable under alternative 2 should these rules be adopted."
- "I am in favor of Alternative 3, a 10% take. Here in Washington state, there are several eyries on highway bridges. The young on these bridges have a much lower survival rate than the average (approximately 30% in the wild). Learning to fly in traffic is very hazardous! We could harvest Washington's 10% from these bridges alone. Doing so would save the birds [sic] lives."
- While we understand the intent of recommending take from bridges and building ledges, we do not believe such recommendations are appropriate in the EA. Since the harvest levels recommended are undetectable, the origin of the young taken shouldn't matter and such recommendations may lead to misunderstanding."
- "Your proposal states (Implementation of Take, page 15) a preference by the USFWS for taking eyass peregrines for so-called at-risk eyries, such as urban sites and bridge sites. Aside from the obvious problems associated with the legal and safety aspects of taking eyasses from dangerous buildings and bridges, work by volunteers in Portland, Oregon and other cites demonstrate that productivity of urban sites can be greatly increased with adequate care and monitoring. The public educational potential is exceptionally good with these initiatives, and would be complicated by falconry take from these highly visible sites. Furthermore, centuries of experience with well known

peregrine eyrie sites in the United Kingdom demonstrate that repeated annual take of one or two eyasses does not cause eyrie abandonment. Since any reasonable scenario of take of wild eyasses will affect less than 10% of eyrie sites west of the 100th meridian, there is no defensible scientific or management rationale for discouraging take from wild eyries. Indeed, a case can be made for encouraging take from remote wild sites with high productivity...”

- *We appreciate that the DEA specifically emphasizes take at high-risk eyries. The WDFW is in discussions with the Washington Department of Transportation regarding falconer access to highway bridge eyries in the state. We are evaluating, however, prohibiting take from buildings because they are high profile watchable wildlife sites. Watchable wildlife live on-line video cameras are installed on some of these in our state. (State Agency)*
- *“Is there any data showing that nestlings in urban settings are exposed to any greater rates of mortality than nestlings in so-called natural settings. The draft EA assumes that urban nest sites would be more vulnerable to nestling mortality, and therefore should be the nest sites most favorable for take of nestlings for falconry purposes. This point-of-view seems simplistic considering the many and varied factors that kill birds of prey in the wild.”*

Response. We changed the wording in the draft to respond to this issue. We believe that special recommendations for take may be appropriate. This is particularly true in well-known or highly visible aerie locations. The details of such management may be handled by each State that allows take.

Issue. *“A strong effort must be made to monitor the falcon population so that adjustments in take can be made should we discover unanticipated declines due to falconry take or any other impacts (e.g. West Nile Virus).” (State Agency)*

Response. If population monitoring shows a statistically significant decline in territory occupancy in any of the three regions for Endangered Species Post-delisting monitoring that include western States, or if we determine that new problems substantially affect the population, we may revoke the authority for take.

Issue. *Permit amendments and notification of permittees.*

- *“...I would like to state my opposition to the FWS’s proposal to amend federal falconry permits on a yearly basis to accommodate peregrine take. ...take will ultimately be controlled by individual states, so permit amendment by FWS is an unnecessarily redundant regulatory function. I suggest the FWS simply remove the restriction against peregrine take on falconry permits and leave final control to the States.”*
- *“NAFA [North American Falconers Association] continues to believe that with the reporting requirements listed in the EA and with standard use of the 3-186A for required within 5 days of acquisition of any raptor, the removal of all peregrine take amendments to falconry permits is justified.*

"WDFW [Washington Department of Fish and Wildlife] believes that this [notification of selected permittees process] creates too much bureaucracy and more permit burden on the individual falconer. We propose that the state notifies the respective Regional Permit Office with one notification for amendments for the group of selected falconers who are permitted take. Another approach could be to delete requirements to amend the falconry permit for a take of peregrines if it is lawful within federal and state regulations." (State Agency)

Response. We agree with the point about notification of permittees, and we changed the notification procedures accordingly. Take of peregrine falcons was not considered when the current falconry regulations were promulgated. Therefore, the issue was not covered in the Environmental Assessment for the regulations. Until revised regulations are published for public comment and put in place, the prohibition on take will remain in place.

Issue. *"If passage peregrines are included in the take, the survival percentage of the peregrine population would be further enhanced."*

"...a Passage bird take would fit the situation in a much better way. My reasoning is that passage birds are easier to train and maintain when caught and if lost they have a much higher rate of survival than [sic] do eyas [sic] birds. This would also decrease the disturbance to nest sights [sic]."

Response. Take of passage (first-year migrant) American peregrine falcons would complicate management in the western U.S. because it could encompass take of *anatum*, *tundrius*, and Peale's peregrines (*F. p. pealei*). Therefore, this Environmental Assessment is intended to evaluate only the proposal by the States to allow take of nestling *anatum* peregrines in the western United States.

Issue. *Many commenters pointed out that the actual take of nestlings will be less than is allowed, so the allowed take should be larger than 5%.*

Response. The Fish and Wildlife Service cannot control the permitting activities of the States. A given State could, for example, provide permits until as many nestlings are taken in the State as allowed under the proposed action. Therefore, we will not increase the permitted take to compensate for the variables in permitting and in take of nestlings.

Issue. *"The assumption that all the eligible licensed falconers in the country would take even one peregrine each year, never mind two a year, is not realistic... Of the approximately 1500-2000 'active' falconers, the majority are not flying peregrines. In reality, there may be a few hundred falconers in the country with an interest (not necessarily the motivation) in taking a wild eyas peregrine. The number is further pared down when you eliminate those individuals not residing in the western states where a take is being proposed."*

- *"A look at the management plan suggests that there was no rigorous analysis of Alternative #6, i.e. no restriction on take beyond the existing falconry regulations."*
- *"It is unrealistic to suggest that an 4000 licensed falconers would be inclined to take a peregrine in a given year."*

Response. We agree that take of two peregrines by every qualified falconer is not likely to occur. We re-wrote Alternative 6 to address this concern.

Issue. *There will be periodic review of the subspecies. Obviously there are some states where there is a bias against any kind of a harvest plan. These states are likely to reach a conclusion that a harvest is not justified under any circumstances or it is premature. I urge the FWS to scrutinize such as state's methodology for review and that the state should be required to submit its hard data to FWS and the recovery team for further peer review and analysis. Other states may conclude that the peregrine population is so healthy that a higher percentage of harvest should be permitted. For those states, after review of the data, the FWS should permit the higher harvest rate.*

Response. The decision to allow or disallow take for falconry rests with each State in which take is allowed. We believe it highly unlikely that a limited take above the 5% level would harm the population. However, for this recently delisted species we concur with the recommendation from the States to allow take of no more than 5% of the nestlings produced.

Issue. *"In previous drafts of the EA, the Service required falconers to wait until eyas peregrines were a minimum of 18 days of age to enable the birds to positively sexed. We recommend the document identify a minimum age of 5 days." (State Agency)*

Response. We changed the conditions for take to accommodate this request.

Issue. *Feathers for analyses.*

- *"The Service has also maintained the requirement that falconers collect and submit two (2) breast feathers for stable isotope analysis. We recommend this requirement be eliminated as neither the states nor the Service have adequate funding to properly carry out the analysis proposed." (State Agency)*
- *"Having the falconer pluck two breast feathers for inclusion with the 3-186A form may be problematic if the individual falconer happens to take a very young bird without this feather growth. Provisions should be made for this possibility."*

Response. Funding for analytical work always will be a concern. However, the costs for shipping and keeping feathers are low. Therefore, we deem it advisable to require the collection, as suggested by Taubert *et al.* (1999). We changed the language in the conditions for take to require that the feathers come from birds of 30 days of age.

Issue. *"I would condition such an action on a minimum number of active nests that is higher than proposed in the draft." (State Agency)*

Response. In allowing take, the minimum number of active nests required in any State also will be function of productivity. We calculated the minimum number of nests required before take could be considered so as to meet the take percentages evaluated in this assessment. Any State may invoke

more stringent requirements - including deciding a larger minimum number of nests - before allowing take.

Issue. *"Each of the alternatives in the EA uses the verbiage "...take of up to X% of the annual production of American peregrine falcons for use in falconry would be authorized." In the final rule, NAFA urges the Service to use the phrase "...take of up to X% of the KNOWN annual production..." We believe there is significant difference in "X% of productivity" vs. "X% of known productivity."*

Response. We disagree that there is a significant difference. It is implicit in all cases that the determinations of take are based on known productivity.

Issue. *"Appendix 1 has several mathematical errors. We suggest all calculations be double checked prior to publication of the document." (State Agency).*

Response. We do not believe that Appendix 1 in the Draft Revised Environmental Assessment contained errors. However, we have updated the Appendix, based on additional data provided by the States, and tried to make it easier to understand.

Issue. *"The possibility that density-dependent factors may later depress productivity and/or survivorship is important. Please identify the parameter(s) being addressed in the 'percent per year decrease in proportion' column in Appendix 2 and provide clarification on how the information relates back to productivity or survivorship as density-dependence is increased. We recommend elaborating on the discussion of how Moffat's equilibrium was added to the model, and whether the model demonstrates an anticipated decrease in productivity." (State Agency)*

Response. For the modeling of λ , we assumed an initial percentage of two-year-old birds breeding. We then assumed that the proportion would decline by 5%, 10%, or 20% per year as population density increased. We did not assume any changes in productivity or mortality in the modeling. One might consider Moffat's equilibrium having been reached when no more two-year-old birds are breeding, but Moffat's equilibrium is not a part of the model.

Issue. *"We recommend the EA establish clear information needs for setting annual falconry take guidelines." (State Agency)*

Response. We revised the section on Management of Falconry Take to respond to this request. In it, there is a subsection entitled "Information Needs." The expected actions of the DMBM and the MT are in subsequent sections.

Issue. *"I would encourage all agencies to evaluate requests for propagation with an elevated degree of care and surveillance." (State Agency)*

Response. Take for propagation has not been requested, nor have we permitted such take. We will address the potential impacts from propagation permitting if we consider permitting take for that

purpose. An Environmental Assessment might be required if we consider allowing substantial take from the wild for propagation purposes.

Issue. *"The Management Plan contained in the EA relies on a FWS' [sic] Draft Monitoring Plan for Peregrine falcons issued in 2003. Specifically, the Management Plan contained in the EA states that the possibility for revocation of permitted take depends on the outcomes of post-delisting monitoring. EA, 15. However, according to the 2003 DMP, monitoring will only occur every three years for 12 years. DMP, 2. Thus, the outcome of post-delisting monitoring will not be known until 2015 (if the DMP is finalized and implemented this year). Without more consistent monitoring, on a shorter timeline, effects to the species caused by take or other factors may not be realized until a serious decline in the population has occurred."*

Response. We do not believe the effects of take under the preferred alternative would be detectable even if biologists were able to monitor every single American peregrine falcon nesting attempt in the western United States. However, monitoring data will be available every three years. After each monitoring year, changes in the number of occupied territories and in productivity will be assessed at the 0.1 significance level. Determination of a population trend will require completion of three monitoring efforts.

As noted in the Section on management of take of nestlings, each year the Management Team will review the DMBM report on take of nestlings and additional information provided by the States. The MT will consider monitoring data, including the latest population monitoring information, and will review information on unintentional take of adults or nestlings, productivity information, and bias in take of female or male nestlings. The Service will adjust take as appropriate and make any other needed decisions about management of the populations and nestling take. We do not believe we should postpone consideration of the request from the States until after post-delisting monitoring is completed.

After each monitoring period, the Service will be able to compare estimates of territory occupancy, nest success, and productivity with benchmark values determined from previous years. Territory occupancy and nest success data will be compared to the regional and nationwide estimates from 1999 to 2002. Declines from sample estimates and these target values greater than 13 percentage points will trigger a response by the FWS. Additionally, to determine whether or not the estimated sample percentages for nest success and occupancy are unusual compared to the target values of each, instead of performing a statistical test, a 90% confidence interval on each estimated sample percentage will be used to evaluate the data.

Productivity data will be compared to recent state and local estimates, as well as to historical rates. Peregrine populations are at least stable when productivity is from 1.0 to 2.0 young per pair, adult mortality is < 15% and juvenile mortality is < 70%; these productivity figures are consistent with estimates in expanding or stable populations in the United States (Corser et al. 1999, Mesta 1999, Hayes and Buchanan 2002). Regional or national estimates of productivity that fall below 1.0 young per pair will initiate a special review.

After the completion of three sampling periods (in 2009), the Service we will be able to expand the analyses to include trends in rates of territory occupancy, nest success, and productivity. Additional analyses might also be appropriate. For example, regional data might be combined to examine rates and trends for the entire nation. With a nationwide sample of 494 territories, an analysis of territory occupancy and nest success will have greater statistical power to detect smaller declines at the national level than is possible at the regional level.

Issue. Composition of the Management Team.

- *"We strongly recommend that the Management Team, described on page [sic] 13-14, include a representative (or two) from a national wildlife conservation organization that does not represent an agency point of view."*
- *"It seems like the management team (MT) should include some reputable, independent (at least nongovernmental) peregrine experts as well as at least one representative from the falconry community to at least monitor MT deliberations, and keep its functioning as open as possible."*
- *"We are not comfortable with the makeup of the proposed State/Federal Management Team (MT) which will review take and recommend adjustments. We continue to advocate a structure more similar to the Flyway system used for migratory birds, where every impacted state interested has representation. We see no credible argument why the Association of Midwest Fish and Wildlife Agencies, the Northeast Association of Fish and Wildlife Agencies, or the Southeast Association of Fish and Wildlife Agencies would want or need representation on this group when take is not and will not be allowed in any member state. At the same time, there will be only one representative from the Western Association of Fish and Wildlife Agencies when all 12 states where take could occur are members of the Western Association." (State Agency)*

Response. As noted in the "Management of Falconry Take" section, the Management Team will review take of the previous year and recommend management actions to the Fish and Wildlife Service. Individuals and organizations are represented through their State agencies. Though important for American peregrine falcon management, this issue does not warrant the measures necessary to allow the Fish and Wildlife Service to meet with private organizations. However, representatives of private organizations are welcome to attend the MT meetings.

The flyway system used in regulation of hunting of waterfowl and some other migratory birds is overly complex for management of take of nestlings. The flyway system has separate technical committees and advisory committees and several meetings per year in each flyway to discuss management issues for many migratory bird species.

Issue. An EIS should be prepared.

- *"NEPA requires that an EIS be prepared for actions significantly affecting the human environment. When determining significance, the FWS must consider the controversial nature of the action, the uncertainties involved, and the cumulative impacts. Based on these considerations, the take of peregrine falcons for falconry may have significant effects on the environment and an EIS should be prepared."*

As noted above, the cumulative effects on falcons from a number of different activities, including recreational rock climbing, take for science and propagation, incidental take caused by falconry or population monitoring, pesticide use, land use activities, or building and bridge maintenance, and illegal take are likely to be significant, requiring the preparation of an EIS.

In addition, the effects of falconry take on Peregrines are highly uncertain as stated in detail above. The EA contains incomplete and potentially invalid population and productivity estimates and the estimates used in modeling are of questionable scientific justification leading to uncertain and

controversial conclusions about the effects of falconry take on Peregrines. Based on these uncertain and controversial effects, an EIS is required."

Response. We disagree. The take proposed by the States and selected as the preferred alternative is so small that no effects of the take on the American peregrine falcon population in the western United States will be discernible. Implementation of the preferred alternative will significantly affect neither the American peregrine falcon nesting population nor the human environment. An EIS is therefore not required by NEPA.

Based on responses to the Draft Revised Environmental Assessment, we conclude that this is not a very controversial action. The Service received 945 comments on the Draft; only six of them opposed allowing take of nestlings for falconry.

As noted earlier, we believe we have addressed cumulative impacts on the American peregrine falcon population in the western United States in developing this assessment. Pesticide use, rock climbing, maintenance of man-made structures, and a variety of land-use practices were ongoing during the recovery of the American peregrine falcon. We have no reason that think that those activities have changed significantly since delisting. Therefore, the consideration of take of nestlings for falconry is, by default, a consideration of cumulative impacts on the American peregrine falcon in the West.

This Environmental Assessment does not need to consider cumulative effects of activities that are not permitted - such as take for scientific purposes, Native American purposes, or captive propagation. We will address the impacts from scientific collecting or propagation permitting if we consider permitting these activities. They have not been addressed since delisting, and no permitting for those activities is planned. NEPA review might be required if we consider allowing take from the wild for scientific or propagation purposes.

Issue. *"Are there any estimates available about the carrying capacity of the western region for nesting peregrines? If so, does your population modeling effort attempt to estimate the size of the eventual floating population that would exist when suitable nest sites have all been occupied. It seems like the dynamics of a growing population -- with a relatively larger proportion of yearling (second-year) and third-year birds having opportunities to breed -- would be very different, in terms of effects of any kind of take; than the dynamics of a stable, healthy population where a relatively small proportion of a relatively large floating population has opportunities to breed in a given year. There should be some explicit system for increasing allowable take beyond the 5% level as western peregrine populations approach saturation. Also, it might be worthwhile to summarize any available evidence of crowding effects on survivorship and fecundity in saturated populations of birds of prey."*

Response. We do not know of any estimate of the actual carrying capacity in the West. We agree that take from a stable population would have even less effect than take from a growing population - which itself is very minimal.

Issue. *"Shouldn't there be some consideration for the impact of peregrine population growth and falconry take on competitive interactions between peregrines and other species (due to competition for nest sites, prey, space) and other species such as the endangered Aplomado Falcon, prairie falcon, Merlin, or predation of species of concern (or listed species) like the Mountain Plover, Piping*

plover, Interior Least Tern, Lesser Prairie Chicken and Sage Grouse. One thing to keep in mind here is that delisting carries with it a fairly explicit (though minimal) demotion of a species' conservation needs in relation to the conservation needs of other species --especially those still listed as Endangered or Threatened. Just to be clear, all I am suggesting is that a multi-species approach would mandate also considering the indirect and potentially beneficial effects of falconry take on species that compete with or are eaten by peregrines in the western U.S."

Response. We agree with this point. There may well be impacts on other species as the American peregrine falcon population in the western United States grows. However, because take of those species by peregrines held for falconry and the take of peregrines for falconry likely are small, we do not believe the allowed take will significantly alter those impacts. The key to protection of those species, if it is necessary, will be reducing the take of them allowed by all means.

Issue. *"To what extent, has (or will) FWS authorize take of peregrines, especially their eyries as part of the Habitat Conservation Planning process under the provisions of the ESA?"*

Response. There are 27 Habitat Conservation Plans that authorize take of peregrine falcons or their habitats. The plans generally allow take of foraging habitat; take of the birds themselves will be very limited, if it occurs at all. We have added to the text of this assessment to discuss this issue.

Issue. *"Has (or will) the FWS begin permitting Native Americans to take peregrines on reservation and other lands? If such take occurs, how will state/federal agencies balance this take with the take of nestlings for falconry purposes?"*

Response. We have not given any permit for take of American peregrine falcons by Native Americans since delisting. NEPA review (which would include assessment of cumulative impacts) might be required if we consider allowing take from the wild for this purpose. Take for all purposes would only be allowed at a level that does not harm the population.



DIVISION OF MIGRATORY BIRD MANAGEMENT
U.S. Fish and Wildlife Service