

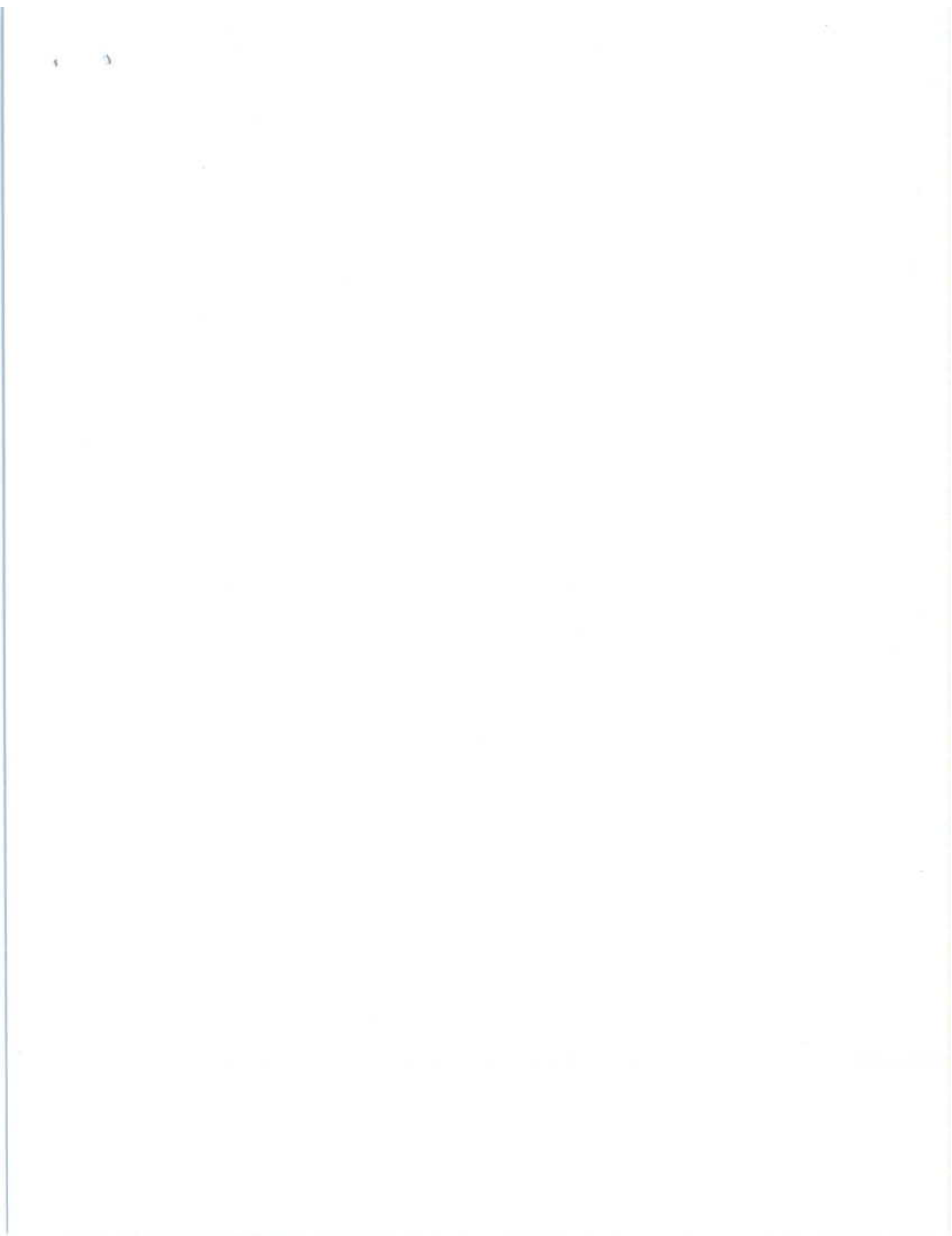
U.S. Fish and Wildlife Service

FINAL ENVIRONMENTAL ASSESSMENT AND MANAGEMENT PLAN

TAKE OF MIGRANT PEREGRINE FALCONS FROM
THE WILD FOR USE IN FALCONRY, AND
REALLOCATION OF NESTLING/FLEDGLING TAKE

DIVISION OF MIGRATORY BIRD MANAGEMENT





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U.S. FISH AND WILDLIFE SERVICE
Division of Migratory Bird Management

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August 2008

ABSTRACT

- In this Environmental Assessment (EA), we consider only the take of wild first-year migrant (passage) peregrine falcons for use in falconry.
- For the purposes of this assessment, we identified three management populations of peregrine falcons in North America and Greenland: (1) Northern, consisting of peregrine falcons of the American (*Falco peregrinus anatum*) and Arctic (*F. p. tundrius*) subspecies originating at natal sites at or north of 54° N latitude; (2) Western, consisting of all American peregrine falcons originating from natal sites at or west of 100° W longitude and south of 54° N latitude and all Peale's peregrines (*F. p. pealei*); and (3) Eastern, consisting of all peregrines (*F. p. anatum* and individuals of all other subspecies released there for management purposes) originating from natal sites east of 100° W longitude and south of 54° N latitude.
- Our management goal is to allow a reasonable harvest of migrant Northern peregrines while simultaneously (1) not increasing cumulative harvest of the U.S. portion of the Western or the Alaskan segment of the Northern population to a harvest rate (the percentage of fledged young in a given year that are removed by falconers) greater than 5% (following the framework established in USFWS [2006]); and (2) having minimal impact on non-target populations by holding take of peregrines from the Canadian portion of the Western population and the Eastern population to a harvest rate of less than 1%.
- We considered eight alternatives for the harvest of passage peregrines. At the request of the Association of Fish and Wildlife Agencies, one alternative considered a harvest of passage peregrines limited to areas of the United States south of 31° N latitude and east of 100° W longitude from 20 September through 20 October annually.

- We analyzed the likely effects of harvest under the eight alternatives using band recovery data for peregrines that had been banded as nestlings and reencountered during their first year, and the best available conservative estimates of population size for each management population. From these data sets, we estimated the proportion of each management population's first-year cohort that potentially would be exposed to harvest risk annually under each alternative, and, assuming harvest was in proportion to availability, the likely makeup of harvest.
- The preferred alternative is to allow an annual take of up to 116 nestling and post-fledging first-year peregrine falcons from the nesting period through 31 August west of 100° W longitude (including Alaska), and allow an annual take of up to 36 first-year migrant peregrine falcons from 20 September through 20 October from anywhere in the U.S. east of 100° W longitude. The reallocation of previously authorized take of nestlings and recent fledglings is necessary to accommodate take of migrants that originate in the western United States.
- The preferred alternative also assumes an annual falconry harvest of up to two migrant peregrine falcons in Canada and up to 25 in Mexico. We believe this is consistent with the current harvest in the two countries.

INTRODUCTION

Wild-caught migratory peregrine falcons (*Falco peregrinus*) were used regularly by North American falconers for the practice of falconry (Ward and Berry 1972) from 1938 until 1970, when two harvested subspecies were added to the list of Threatened and Endangered Wildlife and Plants (Title 50 of the Code of Federal Regulations [CFR] Part 17.11) by the U. S. Fish and Wildlife Service (hereafter USFWS or Service) (1998). The decline of peregrines worldwide has been strongly tied to widespread application of several chlorinated hydrocarbon pesticides, among them DDT and Dieldrin (Nisbet 1988). Restrictions on the use of these pesticides in Canada and the United States, in 1970 and 1972 (USFWS 1998) respectively, resulted in the slow recovery of peregrine populations (Kiff 1988). The Arctic peregrine (*F. p. tundrius*) was removed from the federal endangered species list in 1994 (USFWS 1998). Even though most migratory peregrines taken by falconers were *F. p. tundrius*, resumption of harvest outside Alaska was precluded by the designation of all free-ranging peregrines in the lower 48 states as endangered by similarity of appearance to the American peregrine falcon (*F. p. anatum*; the subspecies of peregrine that occupied much of interior and sub-arctic North America), which remained listed as endangered (USFWS 1998).

In 1995, the USFWS initiated a review of the status of *F. p. anatum* (USFWS 1998), which eventually concluded the subspecies warranted de-listing. Removal of *F. p. anatum* from the federal list of Threatened and Endangered Wildlife and Plants occurred in 1999 (USFWS 1999a). In anticipation of this action, in September 1998, the International Association of Fish and Wildlife Agencies (IAFWA, now the Association of Fish and Wildlife Agencies, or AFWA), acting on behalf of all 50 state wildlife agencies, established a working group to determine if the resumption of a harvest of peregrines by falconers in the lower 48 states was biologically justifiable, and if so, to recommend acceptable biological and implementation criteria for the harvest. The AFWA working group polled state wildlife agencies and found support for a resumption of the harvest, but with the caveat that peregrines from breeding sites in the eastern United States and southeastern Canada be protected from take (Taubert *et al.* 1999). The basis for this caveat was that concerns remained for the status of the species in this geographical segment of its range at the time of delisting (Millsap *et al.* 1998).

The AFWA working group evaluated banding data through 1999 for peregrines and constructed a proposed harvest framework that provided considerable protection for peregrines originating from areas of concern in eastern North America (Taubert *et al.* 1999). The recommended AFWA framework was to (1) allow the falconry take of up to 5% of the estimated production of young at peregrine falcon nest sites west of the 100th meridian; and (2) to allow the take of up to 5% of the estimated production of young by high-latitude peregrines, but with the harvest only occurring in the area

east of the 100th meridian and south of 31° N latitude during the period 25 September through 15 October. This area and time-frame were chosen because the AFWA's analyses indicated that harvest under these restrictions would minimize the risk of harvest of first-year migrant peregrines that originate in the eastern U.S. and southeastern Canada. A majority of the affected States supported this harvest framework, therefore, the recommendations were adopted by AFWA and forwarded to the USFWS.

In October 1999, we published a notice of intent to develop two separate Environmental Assessments (EAs); one for the take of wild nestling *F. p. anatum* west of the 100th meridian, and another for the take of autumn migrants, primarily *F. p. tundrius* (USFWS 1999b). In 2001, we published an assessment of the potential falconry take of nestling *F. p. anatum* west of the 100th meridian (USFWS 2001). The recommended alternative in that EA, which closely resembled the AFWA proposal, was implemented in May 2001. We withdrew the assessment in 2002 in response to a legal challenge of the action, and harvest was not allowed that year. We issued a revised EA in 2004 (USFWS 2004), and the harvest of nestling peregrine falcons resumed that year. Subsequent legal challenges to that action were resolved in favor of the USFWS.

This Final Environmental Assessment (FEA) constitutes the second action proposed by the USFWS in the 1999 Notice of Intent. This FEA presents and evaluates the likely consequences of eight alternatives for implementing a harvest of first-year autumn migrant (passage) peregrine falcons.

PURPOSE AND MANAGEMENT OBJECTIVES

We consider the effects of a harvest of first-year autumn migrant peregrine falcons from the wild for use in falconry. Specifically, we evaluate estimated impacts to biologically- and geographically-defined peregrine falcon populations that would result from a harvest of autumn migrants in different geographic regions of the U.S. The harvest would be by licensed falconers, who operate under falconry regulations at Title 50 of the Code of Federal Regulations (50 CFR 21.28 and 21.29). We use the terms "harvest limit" and "harvest rate" to define harvest throughout this FEA. We define "harvest rate" as the proportion or percentage of the number of fledged young removed by falconers in a given year. We define "harvest limit" as the number of individual peregrine falcons that falconers could potentially harvest at the maximum allowable harvest rate.

Based on the preferences in the preponderance of comments on the Draft Environmental Assessment (DEA) and the Service's goal to maintain peregrine falcon populations at a healthy level, our preferred alternative will be that which affords maximum potential harvest opportunity over the largest geographic harvest area while simultaneously adhering to conservative, biologically-derived limits on the harvest of some geographic populations of the peregrine, as described below. More specifically,

our explicit management goal in the EA is to allow take of up to the maximum safe harvest of first-year peregrines of the Northern management population (see the Biogeography and Distribution section for population descriptions), while simultaneously (1) not exceeding the updated harvest limits for the U.S. portion of the Western management population or the Alaskan segment of the Northern management population established in USFWS (2006); and (2) having minimal impact on non-target populations by holding harvest of peregrines from the Canadian portion of the Western population and the Eastern population to harvest rates less than 1%. The maximum safe harvest for the Canadian portion of the Western population and the Eastern population segments is based on Millsap and Allen (2006), who concluded a 1% harvest rate was not likely to negatively impact any of the raptor species evaluated, including peregrine falcons. The management goal is also to achieve relative sexual parity in the harvest (a sex ratio no greater than 60:40 in either direction, as measured against the harvest limit), and a geographic distribution in harvest proportional to relative population size.

This assessment does not specifically consider the harvest of nestling peregrine falcons from nest sites east of the 100th meridian in the U.S., although one evaluated alternative would allow such a harvest.

NEED FOR ACTION

Possession of a trained raptor listed under 50 CFR Part 10 for falconry or propagation is authorized only by a permit issued under the federal regulations at 50 CFR 21.28 and 21.30. Currently, take and possession of migrant wild peregrine falcons by falconers is prohibited by specific language on the face of each falconer's permit. This limitation was enacted following the delisting of *F. p. anatum* to ensure that resumption of harvest was implemented in a deliberate manner after consideration of all possible impacts to the species. In 1999, AFWA requested that the USFWS undertake an analysis of possible harvest of migrant Northern peregrines. This FEA completes that review, and serves as a management plan for harvest.

SCOPING AND PUBLIC PARTICIPATION

We published a Notice of Intent to Prepare an EA on harvest of nestling Western *F. p. anatum* and migrant Northern peregrine falcons in October 1999 (USFWS 1999b). Substantive comments received in response to that notice were considered in the preparation of our Draft Environmental Assessment (DEA, (USFWS 2007b), for which we published a notice of the availability on November 13, 2007 (USFWS 2007c). We considered comments on the DEA when we prepared this final Environmental Assessment.

ISSUES RAISED IN RESPONSE TO THE DRAFT ENVIRONMENTAL ASSESSMENT

We reviewed suggestions and comments provided to us after we published the DEA in November 2007 (USFWS 2007c). In this section, we respond to comments on the DEA.

Commenters on the DEA were divided in their support for the proposed alternatives. Most state wildlife agencies and some Canadian provincial wildlife agencies in eastern North America supported Alternative 3, but with added restrictions designed to further minimize likelihood of harvest of peregrine falcons from the eastern management population. Some individuals and Canadian provincial and native community wildlife agencies supported Alternative 1, arguing that the loss of even a single individual from some local peregrine falcon populations in eastern Canada was not acceptable. Conversely, most falconers, falconry groups, and many species experts supported Alternative 6, but with elimination of constraints designed to protect certain management populations from harvest, arguing that such protections were unnecessary and overly burdensome.

Below, we summarize issues raised in the comments, give examples of some of the comments received (in italics), and provide the Service's responses.

Issue. Many commenters reported errors or discrepancies in the population size and productivity estimates used in the analyses.

"Sub-populations in N Alberta, Porcupine River, Peel River, Lake Yukon, and Mackenzie Valley, NWT are all part of the northern management area. They have been included in the Western Population in table 1 and table 2 by error. Under the Northern Population in Table 1, the estimate for the sub-population = Northern; Canada; G. Holroyd, pers. comm. already includes the sub-populations just [mentioned]. This error results in an over-estimation of the Western population."

"...the number of pairs estimated in Table 1 and in the text do not match."

"The listed source for arctic Alaska is wrong: the value 225 is the mid-point of an estimate by Cade (1960), and the number of known pairs was 158 (Swem and Ritchie, personal communication)."

"The two values for mainland British Columbia total 12, but the number of pairs was 18 in 2000 (see p 104, Rowell et al 2003)."

Response. We corrected these errors in the text and Tables 1, 2, and 3, and redid analyses as necessary.

"Several populations of the pealei subspecies are also incorrectly included [in the western management population]...The largely nonmigratory pealei populations should comprise a fourth management population."

Response. We concur that as a largely non-migratory subspecies *F. p. pealei* could warrant separate consideration as a unique management population. However, under the revised preferred management alternative we try to make it clear that post-fledged young peregrines that have dispersed from natal areas may be captured by falconers within the Western management population until 31 August, and we anticipate that some mixing of free-flighted U.S. *anatum* and *pealei* could occur during the harvest period. Additionally, the DEA and FEA groups peregrines by management population regardless of subspecies because the three subspecies are not always distinguishable morphologically in the hand, and members of different subspecies often behave similarly relative to factors that would affect potential exposure to harvest. For example, using banding data, migration biology of *F. p. tundrius* is not distinguishable from that of high-latitude *F. p. anatum*. Outside the breeding season, subspecies intermix on migration and on the wintering grounds, making it impossible to tailor regulations to specific subspecies. For these reasons, we decided to retain the *pealei* subspecies within the Western management population.

Issue. Many commenters raised concerns about the use of banding data to infer probability of capture of individuals from the different management populations.

"Band records from 1937 to 1970 describe a species (especially in the case of *anatum*) which no longer exists."

"...the authors felt that they could compensate for the skewed datasets by manipulating the records. For example, returns from banding stations were excluded from the distributional analysis."

"Why does it matter where the first year falcons are in winter...[if] harvest is held to the peak of fall migration?"

"Unfortunately, the existing band recovery data that are used to link potentially harvested birds with specific Peregrine Falcon breeding populations are so severely biased that predictions of population level impacts of the different proposed alternatives are difficult to believe (given the reliance of impact assessments on band recovery analyses)."

"As an example of the skewed data and conclusions I refer you to the available radio telemetry research. I know of 28 *anatum* that have carried transmitters during their first season. Eight of these birds provided no info about winter ranges by reason of transmitter failure or mortality. Thirteen wintered north of 31° north lat. The

remaining seven all wintered south of 31°. They were all in the chosen trapping zone during the proposed harvest period.”

“We are requesting that you provide the actual numbers and locations involved in the location of origin (capture) assessments. For example, the “n” number of banded/recaptures for the East is provided, but not the total number in the banded population, nor the locations and dates of banding stations used in the analysis. Given the small percentage of total number of falcons banded each year, even in states where peregrines are listed, the utility of this statistic is questionable.”

“To summarize, Peregrine Falcon band recovery data are biased by: 1) an unbalanced geographic distribution of original banding effort; 2) geographic biases associated with band recoveries; 3) the lack of information about most banded individuals; and 4) a lack of substantial banding effort in many areas with numerous peregrines.

For some analyses in the DEA, this small number of existing recoveries was further limited by excluding recaptures at migration banding stations, since these recoveries reflect intensive trapping efforts that bias probabilities of recovery towards these areas. While this approach makes some sense conceptually, it only addresses one very small source of bias in this dataset. The other major sources of bias, listed above, are not addressed, nor can they be (in other words, the inherent biases of banding data cannot be fixed by filtering some of this biased dataset during analysis).

Consequently, it is very hard to agree with the approach taken in the DEA (page 9) of summarizing this biased dataset and then treating distributions of latitudinal and longitudinal patterns in band recoveries as “probability distributions...that are representative of the actual distribution of peregrines from each management population.” This assumption, which seems unsupportable, is central to the analysis of the “environmental consequences of the alternatives” beginning on page 15. Therefore, it seems possible that the predicted proportions of management populations that will be affected by each alternative are inaccurate and would be better viewed as unknown.”

“It makes logical sense to use band-return data to estimate the proportion of Northern Canada and Greenland and of Northern Alaska peregrines that are exposed Longitudinally to migrant harvest since these falcons are known to migrate north to south along the Atlantic and Gulf coasts. However, is it logical to use band recovery data to estimate the proportion of these same peregrines exposed Latitudinally to migration harvest? It is known that these peregrines from the far North are strongly programmed to migrate to far South as verified by the band-recovery data plotted in Figure 4. In Table 3 you estimated that the proportion exposed Latitudinally of these peregrines as 0.72. This implies that 0.28 (28%) of these peregrines that had a band

return North of 31 degrees of North Latitude would not be exposed to migration harvest. However, in spite of their band returns, most of these falcons were probably still heading South and would in all likelihood pass South of 31 degrees of North Latitude and thereby be subject to harvest in Alternative 3. Therefore, the proportion exposed Latitudinally to migrant harvest for these two groups of peregrines should be 1.0 rather than 0.72 in Table 3."

Response. We acknowledged the shortcomings of the available banding data in the DEA, but argued that in spite of those shortcomings the banding data were the best data available, and were adequate for the general distributional analyses conducted. After careful consideration of the comments received, our position has not changed.

With respect to the specific issues raised above, of the 323 band reencounters for nestling peregrines from the Eastern management population during their first fall and winter, only 7 (2%) were hatched prior to 1970. Hence, our conclusions regarding movements and distribution of peregrines from the Eastern management population rely almost entirely on records from the contemporary population.

We concur that banding effort has not been uniform, and agree that as a result many local populations are not proportionally represented in the initial banding pool. We acknowledged this in the DEA. However, we believe it is reasonable to assume the pool of banded nestlings provide a coarse but meaningful indication of migration behavior of the management populations as a whole, given the broad geographic scale of those management populations. Accordingly, while we acknowledge uncertainty in the results, we continue to base our harvest limits in part on cumulative probability distributions estimated from band reencounters because we believe these are the best data available for this purpose, and we are required to use the best available data in our decision-making process.

As to why we did not rely more heavily on data from satellite-tagged peregrines, these data are largely unpublished and thus unavailable for complete review to determine their accuracy and applicability. However, using information provided by the commenter, the percentage of satellite-tagged peregrines from the Eastern management population exposed to harvest under Alternative 3 (35%, $n = 20$) does not differ significantly from the percentage inferred from banding data (21%, $n = 106$) (t-test for proportions, $t = 1.23$, $df = 24$, $P = 0.24$). Although the power of this test is low, it is sufficient to conclude that the satellite-tagging data we received during the comment period on the DEA do not lead to substantially different conclusions than the banding data. Given the larger sample size and more representative distribution of banding records, we maintain that the band return data set is more appropriate for our analyses that apply to the management populations as a whole.

We screened the banding data in an effort to moderate biases in the distribution of reencounters, but we agree with several commenters that screening does not eliminate bias. We did not include recaptures at banding stations in cumulative latitudinal frequency distributions because nearly 40% of recaptures were at nine raptor banding stations, and those stations were not evenly distributed relative to the range of latitudes

traversed by migrant peregrine falcons. If reencounters at banding stations had been included, frequency distributions would have reflected the disproportionate number of records from these nine locations clustered in a narrow latitudinal range within the coterminous United States. Because recaptures at banding stations were excluded, our latitudinal distribution assessment used reencounters reported largely by the general public. We recognize that band recoveries by the general public are biased toward areas of human habitation, but we believe this bias is less problematic relative to our objective because human settlements are fairly widespread latitudinally.

We used only winter reencounter records in the latitudinal analysis because fall records present an incomplete picture of the full migration. Where a peregrine was encountered on, for example, 10 October tells little about the full range of latitudes it might have crossed to reach its final wintering destination in November. By using winter records, we could conclude confidently that all latitudes between the natal and winter reencounter latitude were traversed during migration. The combined effect of excluding reencounters at banding stations and using only winter records can be seen in comparative results for the Eastern management population. The mean reencounter latitude for the Eastern management population using all fall and winter records was 37.4° N latitude. The mean reencounter latitude including only winter records was 34.8° N latitude. Deleting reencounters at banding stations, the mean was 34.3° N latitude. To not filter the data by excluding fall and banding station reencounters would have underestimated potential impacts of harvest under Alternatives 2 and 3 on the Eastern management population. In the case of the longitudinal distribution, we compared results from analyses that excluded and included reencounters at banding stations and fall records, and found no substantial difference in the outcome, largely because most of the major raptor banding stations where peregrines were reencountered are along the Atlantic Coast. Thus, if anything, banding data overemphasize the proportion of the Western population that would be exposed to harvest in the eastern United States, a conservative bias in the context of this proposal. To maximize use of all available data, we included all records in the final cumulative longitudinal frequency distribution analysis.

We added a figure in the FEA that shows banding and recovery locations for records used in the analyses. We have not provided a detailed breakdown of banding and capture locations because we do not believe such a summary is useful relative to the amount of space it would require in the final EA. However, the full band recovery data file is part of the administrative record and can be viewed upon request.

Issue. Many commenters took issue with the scientific approach used in this analysis and assessment. Falconers, some states, one flyway council, and most species experts believed the population estimates and analyses were far too conservative and presented an unreasonable underestimate of harvest potential. Some eastern states and most Canadian commenters argued just the opposite - that the analyses were not scientifically rigorous, lacked objective peer review, and were biased in a pro-harvest manner.

"The Science in this document is suspect. If [the Service] believe[s] that this is a credible analysis, let them submit the study for independent peer review."

"For a far greater understanding of the depth of knowledge on the migrant, arctic peregrine, I ask that the Service pay special attention and be guided by the biological data presented in the expert declarations offered by William Seegar, F. Prescott Ward, Mike Yates, Thomas Maechtle, William Mattox, Ian Newton, J. Peter Jenny, James H. Enderson, Tom J. Cade, and Grainger Hunt. Because of their field research, they provide the Service with the knowledge and analysis of their data that, in fact, provides the greatest understanding of the historical and present status of the migrant peregrine. All of the experts conclude that the Service is inordinately conservative in its estimate of the migrant peregrine population, and that a fall harvest of even 5% of the first year migrants will be undetectable. I request that Service revise the numbers in the various population segments based on the data provided by experts to arrive at new population totals. The 5% harvest limit should be recalculated on the revised population totals."

"Assurances presented in the document that a limited number of peregrines would be taken from the "Eastern" population belies the fact that any harvest at this point in recovery is premature for Nova Scotia and the Inner Bay of Fundy populations. We challenge the argument and the science presented in the EA that harvesters could discriminate points of geographic origins of individuals from within the breeding range."

"The quality of data used in the DEA was less than ideal. Efforts are needed to improve the amount and quality of information regarding population size (especially of northern populations), productivity, survival, and movements. Increased banding efforts of nestling peregrines should be encouraged, especially to monitor the effects of take."

"The DEA does not, however, critically examine or explain why it should adopt Millsap and Allen's assumption that overall take should be limited to the greater half of maximum sustained yield or 5 percent. Moreover, it appears that Millsap and Allen's recommendation is somewhat arbitrary and overly conservative...."

"The four-young limit for the Canadian portion of the western population is unreasonably small because minimum population is based on surveys in one year that seldom searched beyond historical sites and the unjustified use of 1.14 young per pair for seven subsets where actual rates were unknown..."

"We appreciate the stated desire of the DEA to identify management populations and structure take to avoid impacts to non-target populations, but we are concerned that the assumptions about the level and origin of take may not be substantiated. The

maximum number of peregrine falcons proposed for U.S. harvest under this alternative is 105, but no scientific basis for this number is provided. We would like to see justification for this level of harvest."

"The choice of 50% of the estimated maximum sustained yield up to 5% of the young produced were offered in Millsap and Allen (2006) as a "practical guide" (p 1398). The authors simply suggest "vital rates are sufficient to justify up to a 5% harvest" of peregrines. The 5% limit was arbitrary and needs to be supported. If this cannot be done, then some other rate below the MSY can be used."

"Models are useful for prediction only when: 1) model structure and assumptions are reasonable for the population of concern; and 2) population parameter estimates are valid, with at least moderate precision. When either of these two conditions is not met, modeling may be useful to provide insight on population processes, but model results may yield unreliable predictions of population size. Although both model structure and parameter inputs are somewhat reasonable for peregrines, there are enough questions about both so that predictions of MSYs for falconry should be taken with a grain of salt...Skepticism of model predictions are adequately reflected in the DEA's final recommendations for harvest levels, which are very conservative relative to model predictions (proposed harvest levels of 5% or 1% of annual production compared with model predicted MSYs of 17% or 13%). This conservatism may adequately address some of the problems inherent with the modeling effort; however, only alternate models or empirical evidence to the contrary could be used to assess this."

"Further explanation is needed on the levels of harvest in the Abstract and Alternative Sections including harvest rates (e.g. annual, total). In addition, there are many harvest rates given throughout the document, making it difficult to follow."

"Conflict of interest exists in the initial proposal to harvest peregrines. The same group of individuals in the United States who have promoted the case through the International Association of Fish and Wildlife Agencies, authored the supporting argument for a harvest and the EA. The document does not adequately or accurately reflect objectivity, quality and confidence that can be accredited to the science, nor does it contain objective presentation of arguments, merits and value systems in opposition to the harvest."

Response. Our assessment of the sustainability of falconry harvest for a number of raptor species, including the peregrine falcon, was subjected to scientific peer review and published in a credible scientific journal (Millsap and Allen 2006). That assessment indicated that healthy peregrine falcon populations should be able to sustain a harvest rate well over 2 times the proposed level of 5%. Based on that analysis, the Service believes the scientific evidence supports the conclusion that a harvest rate of 5% for peregrines throughout North America is appropriately

conservative, sustainable, and would have no measurable impact on wild populations of the species and, as such, should not require costly and impractical population monitoring to document actual effects on populations. That same analysis concluded that harvest rates of up to 1% were likely to be inconsequential even to raptor populations in decline because of reductions in habitat or prey populations.

The cost of increasing harvest rates further toward MSY is the need to implement robust population monitoring, which for the peregrine would be extremely difficult logistically and financially. We believe that a conservative harvest rate well below $\frac{1}{2}$ MSY is a defensible alternative. This approach has been adopted for the management of falconry harvest overall by the Service in our most recent FEA on falconry (USFWS 2007a), so its application here is not arbitrary, but instead is consistent with our treatment of other raptors for which we allow falconry harvest.

The additional constraints imposed by the Service on harvest by management population (limiting harvest to less than 1% for some management populations) were at the request of some of the wildlife management agencies that share management authority for this species with the Service. We respect the opinions of our management partners, and have addressed their concerns by imposing lower harvest limits for non-target peregrine falcon populations (from 5% to 1%, consistent with the Service's published analysis in Millsap and Allen 2006). However, to reiterate, the Service does not believe these constraints are *biologically* necessary in the face of our published assessment that a harvest rate of 5% for peregrines is sustainable and conservative. Accordingly, we find no value in subjecting the constraints or our approach in addressing them to additional scientific review beyond that afforded through the DEA comment process. Nearly all of the management agencies that requested the additional constraints that commented on the DEA, including the Atlantic and Mississippi flyway councils on behalf of their member states, did not object to the approach used by the Service to buffer non-target management populations from harvest. However, there was some concern over the quality of the data available on population size and movements. Our approach has not resolved the concerns of many Canadian provincial and native community wildlife management authorities, and we respond to this issue separately.

As to the lack of objectivity and credibility on the part of the author of the DEA, the document was subjected to intense internal review by other Service biologists and Department of Interior solicitors who had no historical involvement in the issue, and, as noted above, the principle scientific underpinnings were peer reviewed prior to being published in a credible scientific journal. We respectfully disagree with this comment.

*"I have stated in providing data to several projects...that a conservative estimate of the current population of peregrine falcons in Greenland is 2,000 pairs (range 1,500 – 2,500)... Unless more accurate population estimates and data on productivity in Greenland are used, the conclusions and recommendations are made even **more** conservative and fail to correspond with reality."*

"I also challenge the population estimates. These vary in some case by more than 400%. Such a large range is not an estimate at all, it is a guess."

"Considering the rate at which peregrine populations continue to increase, the data summarized in Table 1 are already outdated."

"Rowell et al 2003 is cited for 19 surveys of regional populations in Table 1. Two of these populations in 2000 remained unchanged from counts in 1995 (Mackenzie and Yukon Rivers) and one declined (Labrador and Newfoundland: snow and late counts were problems, and there was evidence 11 other sites were recently used). All other subsets showed increases, often substantial. These increases may not have stopped after 2000. Continuing growth should be accounted for in the maximum estimate column."

"In looking at the figures for the Northern population in Table 1, I would give the range for Interior Alaska as 700 to 800 pairs rather than 1000, for Arctic Alaska 400-500 pairs instead of 225 (there may be that many on the Colville River watershed alone), and for northern Canada 3000 to 6000 instead of 1143 to 4350, and 500 to 1000 for Greenland instead of 450 to 2000. My figures give a minimum total estimate of 4600 pairs, and 8,300 pairs for the maximum, with a median value of 6450 pairs. Using a low productivity of 1.3 young per egg-laying pair gives an annual production of 8385 fledglings in a total late summer population of 12,900 breeders, perhaps 10,000 floaters, and 8385 young of the year (total potential migrating population of 31,285 falcons)."

"In the DEA Table 3, the "Estimated migrant population size of the Northern - Canada and Greenland" is 2,375 first-year peregrines. This figure is the sum of the "Minimum number of young fledged per year for Canada and Greenland" taken from Table 2 and multiplied by 0.9. Also shown in Table 2 is the "Maximum number of young fledged per year for Canada and Greenland", which if added together and multiplied by 0.9 would equal 9,504. I must assume that both sets of figures have credibility or they would not be included in the DEA. I would like to suggest that the mean of the minimum and maximum numbers, which would equal 5,940 peregrines, be used for the "Estimated migrant population size of Northern -Canada and Greenland" in Table 3. While it could be argued that all estimates should be safe-sided, by restricting the take of passage peregrines to 5% of the "Estimated migrant population size" in Table 3, the take is already very safe-sided. Therefore, I suggest that you use the figure of 5,940 "Estimated migrant population size of Northern - Canada and Greenland" in Table 3 as representing the best available estimate based on the data in the DEA. This change would significantly increase allowable take of migrating peregrines. Alternately, if the total take were held to 132 peregrines, the

higher estimated pool of Northern peregrines would dilute (reduce) the incidental take of Eastern peregrines and thereby support the suggestion ... to allow a take of some peregrines along the entire Atlantic coast."

Response. We acknowledge that there is considerable uncertainty with respect to population size and productivity for many peregrine falcon populations, and we concur that the best data available for some populations is dated and likely underestimates current population size. However, the initial AFWA request to the Service to allow a harvest of fall migrant peregrines specified that the approach should be conservative. Moreover, in our initial discussions with the Canadian Wildlife Service (CWS) regarding a possible harvest of migrant peregrines, CWS specifically requested that the Service use minimum known population numbers for northern peregrines to establish harvest quotas, if harvest was allowed. Our use of conservative numbers was deliberate - to ensure we do not overestimate harvest potential, in deference to the requests from agencies with which we share management responsibility for the species. Commenters who focus on the wide range between minimum and maximum population or productivity estimates are correct in the assertion that this reflects a great deal of uncertainty. However, we disagree that allowing harvest in the face of such uncertainty is inappropriate when we consistently use minimum known values to calculate harvest levels, and thus almost certainly underestimate actual harvest potential.

"Reproductive rates should not be based on a single year. Rates of 1.13 to 1.18 young per pair on territory applied to Alaskan and British Columbia falcons seem unrealistically low. As early as 1980-85 Alaskan peregrines averaged 1.6 or higher..."

"The rate of 1.8 young for Greenland is based on a small sample, much larger samples as available for western Greenland."

"Mattox and Seegar (1988) reported that the number of young per pair was 2.3 (range = 1.8 to 2.8) and 2.9 young per successful pair (Attachment 3). Our study area spanned optimum peregrine nesting habitat (nest site and prey availability), which explains the higher number of young per pair compared with SW Greenland (Faulk and Møller, 1988). I consider that the number of young per pair listed in Table 2 is too low, and should be corrected to ca. 2.0, and the minimum/maximum number of young fledged per year adjusted upwards."

Response. Recent productivity data for British Columbia were lacking so the value used is the average productivity for other locations in the Western management population with contemporary data (and this value has been corrected in the FEA). Productivity estimates for the Northern management population in Alaska are based on a long-term study of nesting peregrines on the Colville River that has been

conducted in recent years by the Service. The productivity estimate of 1.13 (now 1.14 based on a reanalysis of the data) is the average number of young fledged per nest site occupied by a pair of falcons during the period 1995 – 2005. Although the data set goes back much further, and if all years are included average productivity is higher, the Service believes the most recent 10-year period is the most appropriate time-frame to consider for this analysis. Upon consideration of the comments we received regarding productivity of Greenland peregrines, and given the peer-reviewed data provided in Mattox and Seegar (1998), we have revised our estimate of average production for peregrines in Greenland to 2.0 young per occupied nest site.

Issue. A number of commenters expressed concern that the considerable harvest potential of the Western management population was not fully realized under any of the proposed alternatives.

"The PFC NTC suspects that peregrine population status has changed over the seven-year time interval along with relative concern among managers about population status; consequently our comments reflect a desire to explore possibilities that might allow western states to authorize a higher level of harvest of peregrine falcons, including migrants, if they desire.... From the available data, there is very little reason to believe that significant numbers of migrant peregrines harvested prior to the middle of September and only harvested west of the Mississippi River would have originated from the western Canadian Province populations. Given this, it seems reasonable that the states west of the Mississippi River could establish limited seasons for the harvest of local migrant peregrines prior to September 20, taking into consideration the existing 180-day season regulation for falconry harvest. This approach would address the desire of the Canadian Government to protect their F. p. anatum population and provide flexibility for western states to manage a sustainable harvest of migrating/ passage peregrines. The maximum allowable harvest for western peregrine nestlings has not been met and the additional harvest of migrant peregrines, as long as the total numbers did not exceed the 5% level, would be biologically appropriate. This option may address issue #2, above, if implemented properly."

"If one of the non-preferred alternatives were to be implemented, the states would recommend more flexibility in the ability to regulate nestling versus migrant harvest. Given that the biological impact will affect the same cohort, the states should be allowed to manipulate their harvest based upon the needs of the falconer while maintaining the 5 percent harvest level in the west."

"FWS should examine alternatives not based on overly conservative or unnecessarily restrictive arbitrary assumptions about what level of overall nationwide take peregrine falcon populations can support, and should examine alternatives allocating overall nationwide take by geographical area, preferably on a flyway-by-flyway basis, depending on what level each flyway can support, in order to at least give

those falconers in the West and Midwest the opportunity, if they should choose to do so, to attempt to capture a peregrine falcon from the wild for use in falconry."

"...I would like to see the take of nestling (eyas) *anatum* peregrines for falconry in the western states expanded to include any fledged or first-year birds of any subspecies."

"Since southern Canadian peregrines are listed by the Canadian Wildlife Service as a species-at-risk and northern peregrines are not, with different rules governing falconry take for both populations, it seems like splitting Canada into northern and southern populations makes sense for the management of falconry take. Since there are different regulations for falconry in the Western US and the rest of the US, it seems like separating US states into Western and eastern management populations makes sense. Since the government of Greenland has expressed reservations about US falconry take, it seems sensible to make Greenland a separate management population. This would result in 7 different management populations.... Future efforts to describe the proportion of falcons taken for falconry using stable isotopes... could then focus on these 7 management units, which reflect a compromise between a true geographic discontinuity between the distribution of northern and southern birds and political divisions within these two regions. Although birds may disperse across politically defined management unit boundaries, these different political units have important differences in laws and concerns regarding falconry."

Response. We do not believe the available banding data can support subdivision of management populations, either biologically or administratively (such as to conform to flyway council boundaries). We have, however, used the available population data to assess the likely effects of harvest on, for example, the Canadian portion of the Western management population in an effort to assess and limit possible impacts of the proposed harvest.

After careful consideration, we agree that the proposed alternatives were unnecessarily restrictive relative to the harvest potential of the United States' segment of the Western management population, including both interior western United States *F. p. anatum* and coastal *F. p. pealei*. Banding data, though sparse, show that peregrines from the Canadian portion of the Western management population occur broadly in the western U.S. during migration and in winter. Accordingly we do not believe it is possible to allow a harvest in the coterminous western U.S. after 1 September (see Figure 6) that does not potentially result in incidental take of western Canadian peregrines. However, we believe a hybrid alternative, consisting of elements of Alternatives 1 and 6 from the DEA with some modifications, would provide greater use of the Western management population's harvest potential. Under the hybrid alternative (Alternative 7 in this FEA), we would allow harvest of resident peregrine falcons less than one year old from anywhere west of 100° W longitude from the nesting period through 31 August. By restricting the harvest period for resident peregrines from the Western management population to exclude fall

migration and winter, the risk of incidental harvest of western Canadian *F. p. anatum* is essentially eliminated.

"The DEA examines only take limits applicable to all subspecies of peregrine falcons. However, the DEA does not address whether take limits for each subspecies of peregrine falcon would be feasible and/or beneficial. The FWS should consider whether such limits, which could be narrowly tailored to address concerns related to each subspecies, could or should be implemented. For example, to the extent the FWS is more concerned about the take of Anatum peregrines than other subspecies, the DEA should at least consider whether it can examine alternatives that provide separate take limits for Anatum and other subspecies. Similarly, the Peale's peregrine falcon currently exists in particularly healthy numbers and has never been threatened or endangered anywhere in the United States. Therefore FWS should consider whether any restriction is justified with regard to Peale's peregrines and, if so, how restrictive those regulations really need to be to maintain healthy populations of Peale's peregrines."

Response. The DEA groups peregrines by management population regardless of subspecies because the three subspecies are not always distinguishable morphologically in the hand, and members of different subspecies often behave similarly relative to factors that would affect potential exposure to harvest. For example, using banding data, migration biology of *F. p. tundrius* is not distinguishable from that of high-latitude *F. p. anatum*. Outside the breeding season, subspecies intermix on migration and on the wintering grounds, making it impossible to tailor regulations to specific subspecies.

Issue. Many falconers, falconry groups, and some states preferred Alternative 6 to the DEA's preferred Alternative 3 in spite of the lower harvest threshold.

"I have reviewed the DEA and support the idea suggested in Alternative 6 allowing take of first-year migrant peregrine falcons from 20 September through 20 October from anywhere in the U.S. However, I believe that to limit the take to 34 birds annually is much too restrictive. The current population trend is higher and continues to show increases. Additionally, due to those increasing numbers, I guess that the east coast states have a lower concern about impacts to their "resident" peregrine populations being impacted. I would like to see a permitted take for falconry of at least 183 arctic peregrines. I base this on the DEA's words of "...our explicit management goal is to allow a harvest of up to 5% of minimum annual production of Northern peregrines, which is 183 migrants."

"While I generally support Alternative 3 in the DEA, would you please consider a modification to Alternative 3 whereby some hatching-year migrating peregrines could be harvested for falconry along the entire Atlantic coast as well as along the Gulf of

Mexico? I believe that this option represents the desire of most falconers in the Eastern U.S. The Eastern U.S. falconers played a key role in the successful reintroduction of the Eastern peregrine by developing the breeding techniques, actively participating in the breeding and release projects, and financially supporting the effort through the Peregrine Fund. Why penalize these falconers for their success by barring them from taking a modest and fully supportable number of migrating peregrines along their nearby coast? For example, in Maine we have a substantial migration of Northern peregrines along the immediate coast and most particularly over the off coast islands. These same falcons are headed South far below 31 degrees North Latitude. Why should Maine falconers drive all the way to Florida or the Gulf coast to trap a peregrine when we could trap the same bird here with a huge savings in gasoline, time and money?"

"Annual migration counts for the peregrine indicate that the tundrius population is robust and expanding. The tundrius peregrine appears to require no special protection beyond the restrictions of the current falconry regulations, i.e. only immature raptors may be taken and only two raptors may be taken per year per permittee. The proposed season for take (September 20 through October 20) is the period in which tundrius peregrine numbers far exceed anatum peregrine numbers in Maryland. If provided the opportunity, we could restrict the take of migrant peregrines in Maryland to the Atlantic coastal area, where most of the tundrius peregrine migration occurs and where there is a low probability of take of anatum peregrines."

Response. Under the new hybrid Alternative 7, we would allow harvest of fall migrant peregrine falcons anywhere in the United States east of 100° W longitude under the same constraints proposed for Alternative 6. Of course, each state would have to concur for harvest to actually be allowed in a particular state. Harvest west of 100° W longitude would be restricted to the period from nesting through 31 August. The combined effect of these constraints would be protection of non-target peregrine populations, and increasing allowable harvest toward threshold levels for target populations. Because we retain the constraints on harvest levels for non-target populations, the proposed harvest under this alternative remains considerably below the full harvest potential of the Northern management population.

Issue. Some commenters expressed concern over the reduction in allowable harvest to accommodate existing authorized and unauthorized take by falconers in Canada and Mexico.

"The reported but undocumented illegal take in Mexico should not count against the take allowed US falconers. Losses such as these are accounted for in the first-year survivorship estimates used in the preliminary modeling "

Response. At the request of CWS, we agreed to accommodate existing falconry harvest within the proposed harvest thresholds. We consulted with the management authority for the species in Mexico (Secretaría de Medio Ambiente y Recursos Naturales, or SEMERNAT), and they concurred with this approach. We continue to believe it is appropriate to accommodate all known falconry harvest from the management populations under review within the proposed harvest thresholds. However, in our reconsideration of this issue we concluded that it is possible to more precisely assess which management populations are likely to be affected by the existing harvest. Specifically, of the 323 band reencounters for peregrines from the Eastern management population, only three (1.2%) were reencountered in Mexico and none in Saskatchewan, suggesting exposure of individuals from this management population to harvest in western Canada and in Mexico is negligible. Accordingly, in the FEA, we consider the Eastern management population to not be affected by the existing migrant peregrine harvest in Canada and Mexico.

Issue. One falconry group expressed concern that the restrictions on migrant peregrine harvest proposed by the Service were excessive and reflected a lack of appreciation for the efforts of falconers in peregrine recovery.

"The recovery of the peregrine falcon to healthy levels is largely due to the actions and support of the falconry community including many of WRTC's members. Indeed, falconers have consistently led the way in raptor conservation and recovery of threatened and endangered species. In 1965, falconers concerned about the plight of the peregrine falcon participated in the International Peregrine Conference in Madison, Wisconsin. This conference highlighted the disappearance of the peregrine falcon and the need to conserve raptors. The falconry community itself was the driving force behind Migratory Bird Treaty Act ("MBTA") regulation of raptors, including the designation of "apprentice," "general," and "master" levels of falconry and institution of falconry and raptor propagation permits. Through a captive breeding program developed by falconers, the peregrine falcon population in the United States was returned to a healthy level, and the breeding principles developed by falconers have since been used to augment other raptor populations as well. The falconry community, as small as it may be, is a valuable ally in the quest to regulate and conserve raptors. The peregrine falcon is living proof. The FWS should work with, rather than against, the falconry community in crafting reasonable, scientifically sound regulations that allow falconers to practice falconry free from unnecessary restriction while meeting the FWS's conservation goals. The effort to allow regulated take of migrant peregrines for falconry purposes should be made in that spirit of cooperation."

Response. The Service appreciates the efforts of all our partners in the recovery of the peregrine falcon, falconers and non-falconers. We are very disappointed that some falconers believe the Service is working counter to their interest. Over the past five years, the Service has spent considerable time and effort in scientific studies that

provide support for the take of raptors from the wild by falconers, in regulation revisions that were requested by the falconry community, and in preparing management plans for the harvest of peregrines in the face of continuing concerns by the wildlife management authorities in several of the jurisdictions affected. We have strived to strike a balance between the interests of falconers and those of the management agencies and other organizations that remain concerned about the proposed harvest of peregrines. Given budget constraints, technical issues, and logistical limitations on our ability to conduct monitoring at a scale sufficient to actually measure the impact of the harvest, we believe the safeguards employed are appropriate, warranted, and will not overly compromise falconers' access to migrant peregrines.

Issue. Many commenters requested that no harvest be allowed unless accompanied by increased banding and population monitoring, several commenters requested a requirement that all peregrines wearing research bands are released, and one state asked for a requirement that all peregrines captured by falconers and released are banded with research bands.

"The DEA suggests periodic analyses of population monitoring data to determine if population trajectories have changed enough to merit revisiting harvest limits. As stated in the DEA, now that Peregrine Falcons have been delisted, the scale of breeding-season monitoring programs has been cut back. Similarly, post-delisting monitoring efforts for Peregrine Falcons in the lower 48 states of the US will continue for less than 10 more years. At this point, with the exception of relatively local monitoring programs, and periodic large scale survey efforts like the Canadian Peregrine Falcon Survey (Rowell et al. 2003), migration counts will provide perhaps the best source of population trend information for Peregrine Falcons. If falconry harvest is to be allowed it makes sense to continue to support this monitoring effort."

"The Ontario Ministry of Natural Resources prefers Alternative 1 (No action) until the PEFA population is considered more secure across eastern North America. If the U.S. Fish and Wildlife Service decides to allow the take of passage peregrines we request that the following actions be considered.

- U.S. Fish and Wildlife Service establish a 3-year pilot project to assess the origin of birds taken and potential population impacts, with regular analysis and review of results, before allowing the continued take of PEFA by regulation, and that as part of the pilot project the U.S. Fish and Wildlife Service:*

- support increased banding efforts in the United States and Canada in an effort to determine the origin of captured birds;*
- support increased monitoring of PEFA populations in the United States and Canada to ensure the take of birds for falconry does not impact populations;*
- require the collection and regular analysis of feather samples from birds taken from the wild for stable isotope analysis to compliment banding efforts;*

- ensure the documentation and release of all banded birds that are captured;
- make available all information on birds banded and recaptures, resightings and recoveries."

"The quality of data used in the DEA was less than ideal. Efforts are needed to improve the amount and quality of information regarding population size (especially of northern populations), productivity, survival, and movements. Increased banding efforts of nestling peregrines should be encouraged, especially to monitor the effects of take."

"Captured peregrines with leg bands should be released immediately after band information is collected."

"Migrant Peregrine Falcons taken for falconry-and later returned to the wild-should be banded in order to provide information about subsequent survival."

"Management" of a migrant harvest as proposed in the document presumes that: all provinces, territories and Federal Government support this objective; have public support; and have sufficient resources to monitor peregrine populations with sufficient rigor."

"There is another fatal flaw in the trapping plan. It is impossible to measure the impact of the trapping regimen peregrine populations. Moreover, even if a method could be devised, there is no mechanism in the plan to suspend trapping in case of trouble. Nor is there any consideration for adjusting the take according to the productivity of the season. In some seasons, for example, less than 30% of traditional nesting sites are occupied."

"We can address the expressed needs of the USFWS in adequately monitoring Peregrine populations during the proposed harvest. With adequate resources we can provide the required information on natal origins, regional migration phonology, population estimates, etc. We would welcome both the input of the USFWS in augmenting our protocols to specifically address its monitoring needs, and any available funding support to further those ends and continue to support the general welfare of Peregrine Falcons."

"Because additional measures to address potential over-harvest may be needed or desired in some areas where peregrines are listed as threatened or endangered, we originally had planned to recommend that take of peregrines be specifically prohibited for individuals banded with black/red or black/green secondary bands, used within the Eastern population zone, or other color combinations from populations in which the species is listed as endangered or threatened. While we believe that in some states this constraint would be in keeping with the goals outlined in the DEA, we realize that this approach biases banding efforts, especially as they relate to the use of band recoveries to determine population vital rates. In keeping with the FWS/Flyway Council model of regulating take of migratory birds, we request that in any final rule

the FWS allow maximum flexibility for the AF to propose measures as needed in the future within the AF to address issues regarding over-harvest of juveniles within individual or multiple states. We realize that harvest prohibitions in a particular area would not protect all peregrines originating from that area. However, like the FWS, the AF wants to maintain our role in recovering peregrine populations in all applicable areas within the AF. We believe this approach is consistent with allowable take and population recovery objectives."

"A further acceptable restriction would be to require that all banded peregrines trapped during the take period be immediately released. This restriction would exempt Eastern peregrines that had been banded to any take by falconers."

Response. The approach taken in the DEA is extremely conservative explicitly because we do not think it is practical to monitor the impact of the proposed harvest on populations. Target harvest rates are intentionally low enough that it is reasonable to assume no population-level impact will occur, consequently we do not believe increased population monitoring is required by the proposed action. Likewise, while we believe increased banding or satellite tagging following a well-designed study protocol would be helpful in a finer-scale assessment, the harvest levels proposed do not warrant mandating such work. If an increase in harvest rates above those considered here are desired by falconers or state management agencies, these or other comparable monitoring techniques should be considered as part of any future proposal. That said, the Service concurs that continued monitoring of peregrine falcon populations is desirable, and we believe migration counts, particularly at sites where large numbers of migrant peregrines can be counted following a consistent, standardized methodology, will be particularly valuable in assessing the overall health and trend of the Northern management population. For these reasons, we encourage the flyway councils representing the management agencies that requested the migrant peregrine harvest to consider supporting existing standardized fall migration counts at key peregrine concentration points.

The initial AFWA request for the Service to develop this proposal included, as an added constraint, the requirement to release captured peregrines wearing research bands. Because a higher proportion of peregrines from non-target populations are banded compared to target populations, this would further reduce the likelihood of non-target peregrines being captured. Based on initial conversations with the U.S. Geologic Survey Bird Banding Laboratory (BBL) staff, we decided not to propose this constraint because it would introduce a bias in the band recovery dataset for the peregrine, potentially complicating future data analyses. However, in response to the comments from Canadian provincial wildlife management authorities and two flyway councils, we reinitiated discussions with BBL. As a result, the Service and BBL have determined that the potential benefits outweigh the costs of such a constraint, and so the Service has included this requirement in the FEA and management plan. The Service does not have the resources to support additional banding efforts in the U.S.

or Canada. As with monitoring, we encourage the flyway councils representing the management agencies that requested the migrant peregrine harvest to consider supporting additional strategic banding where warranted in the U.S. and Canada, though we do not require this as a condition of moving forward with the proposed harvest.

With respect to the request to require research-banding of released peregrines after use in falconry, we believe it is unlikely sufficient numbers of these birds would be reencountered to provide meaningful inferences about post-release survival, etc. However, we agree that helpful anecdotal information could be obtained. We have decided not to include this as a mandatory element of the management plan, but we see no reason to object to states requiring such banding if and where practical.

Issue. Many commenters felt that the Service should have relied more heavily on existing migration count data and genetic analyses of effective population size to establish population size estimates for the proposal. Some commenters argued that migration count data show there are many more migrant peregrines than the Service's analysis concluded.

"Large movements of Peregrines continue to be counted on the Atlantic Coast and over and around the Gulf of Mexico, including 1500 to 2000 annually since 1999 in the Florida Keys (Lott 2006). The +4000 offshore oil and gas platforms in the Gulf of Mexico now attract millions of migratory birds, including thousands of Peregrines (Russell 2005). According to Russell (2001, 2005, personal comm.) and his coworkers all of these platforms are now used by Peregrines as brief stopovers (3-4 days) where they rest and hunt migratory birds, mostly at night. Extrapolations of counts at 10 platforms to the entire population of platforms gave estimates that 11,000 to 66,000 falcons could have used oil platforms in 1999, depending on assumptions about duplication of observed birds. During a three day period at the end of September, records of 45 individually identifiable falcons (a fraction of the total seen) were extrapolated to yield a minimum instantaneous point count of about 11,000 falcons at the platforms. The peak movement occurred between 1-5 October when 85 or 31% of all observed birds were counted. If that 31% equaled a total of 11,000 birds (a minimal estimate), then the total passage was 31,484 falcons, of which 60% or 21,290 were juveniles. [Note: the juvenile to adult ratio is about twice as high as reported in the Florida Keys.] An unknown number of migrants also pass around the Gulf of Mexico on its landward border; considering that fact and the apparently separate passage down the Florida Keys, the total movement could have been 40,000 birds minimum. These estimates do not include the falcons moving south to the west of 100° W Long and passing into mainland Mexico and the Gulf of California region. If they represent 20% of the continental migration, then add another 10,000 for a total migration of 50,000 Peregrines. Thus, these migration figures generally fit the upper population estimates based on number of breeding pairs."

“Recently, HawkWatch International, Hawk Mountain Sanctuary, and the Hawk Migration Association of North America have collaborated to produce a continental-scale analysis of raptor population trends from migration count data.... The first of these analyses was completed in 2006... Trend analyses were performed for 11 migration sites, two representing the Great Lakes region, two from the Appalachians, two from the northeast Atlantic Coast, four from the Gulf Coast, and one from the southern Rocky Mountains. Note that the four sites in the Gulf Coast region have only been active since the mid-to-late 1990s. Trend estimates for these sites are less precise than trend estimates from northern sites with 19-21 years of data. Given the relatively low coefficient of variation (CV) of migration counts in the Gulf Coast region, it is expected that trend estimates for Gulf Coast sites will acquire the precision necessary to detect significant trends (should they be present) within a few years. Sites with enough data to detect significant trends documented widespread significant increases for Peregrine Falcon populations in recent years.... Note that many of the sites ...count a relatively small number of Peregrine Falcons. Counts at Curry Hammock State Park in the Florida Keys; Cape May, NJ; and Veracruz, Mexico record a much larger proportion of the range-wide population for this species than other sites. Two additional sites, Kiptopeke, VA, about 100 miles south of Cape May on the Atlantic Coast, and Kekoldi, Costa Rica, also count large numbers of Peregrine Falcons, and trend analyses will be performed for these sites as well...”

“This DEA ignores the abundant recent published data on coastal migrants. This is a significant shortcoming because those data strengthen the position that a harvest should be allowed. ”

“Since 1970 we and our colleagues have invested a total of 46,242 man hours on migratory Peregrine Falcon surveys at both Padre and Assateague Islands in the autumn (both islands) and spring (Padre Island). We have meticulously recorded 55,198 sightings of Peregrine Falcons by age, sex, date, time and location. Of the falcons sighted we have captured 12,673 individuals. We have banded all new captures and reported those previously banded, sampled many individuals for studies on genetics, environmental contaminants and known and emerging pathogens (West Nile Virus, Avian Influenza and others). Many were tagged with VHF or satellite telemetry transmitters to elucidate local, regional and transcontinental movements and habitat requirements for the Tundra Peregrine in our hemisphere.... [T]he standardized average number of migrating Peregrines we have observed over the past 29 years is essentially the same as that Nye saw more than six decades ago, before DDT had serious adverse effects on the reproductive potential of the Peregrine Falcon in North America.”

“Perhaps the best recent data to substantiate the population status of North American migrant peregrines is a 2007 paper by Johnson and Mindell. (Johnson JA, Mindell DP (2007) Temporal population genetic stability of Peregrine Falcons

migrating through Padre Island, Texas. 125th Stated Meeting of the American Ornithologists' Union. Aug 8-11, 2007, Laramie, WY.) wherein they examined tissue samples from migrant peregrines collected between 1985 and 2006 to determine the effective population size (number of breeders) based on a temporal genetic approach that estimates the population size necessary to account for allele frequency change over time due to genetic drift (random change in allele frequencies over time). This technique is often used for determining fisheries spawning stock size and then used to ascertain harvest quotas. Eleven micro satellite loci were used to estimate the effective population size of migrant peregrine falcons using similar methods. The results indicated that the rate of allele frequency change was low indicating that the samples came from a large effective population size (N_e) estimates ranging between 350 to 9,999 breeding falcons per generation with a confidence interval ranging between 137 to 10,000+ individuals. The fact that the method did not provide a precise estimate further suggests that the population is large with genetic drift playing little influence on allele frequency change. When populations are less than 1000 breeding individuals, this method is much more precise (i.e., smaller confidence interval)."

Response. We concur that migration count data provide useful information on the recovery and relative population trends for migrant peregrines. We reviewed and considered this information in the preparation of the DEA, but concluded that it did not help inform estimates of population size because counts of migrants from different sites are likely to be, to some unknown degree, duplicative. Further, no single independent site, or combination of sites, counted a substantial enough proportion of the migrant population to stand alone. Information gleaned from peregrine falcon use of oil platforms in the Gulf of Mexico is intriguing, but it has not been published or subjected to scientific review, hence its use to establish harvest thresholds would be premature. Recent population estimates based on estimates of effective population size also offer promise in establishing safe, lower limits for the size of the migrant population, but this work has not been peer-reviewed and published, and we do not believe it should be used as the basis for harvest thresholds. These approaches should be reviewed in the future as part of the periodic population reassessments called for in this FEA.

Issue. One commenter provided a summary of recent, unpublished work calling into question the validity of stable isotope analysis to determine the latitude of origin for birds. In contrast, other commenters felt that use of this technique to validate banding data was so important that the Service should conduct stable isotope analysis of feathers annually.

"In sum, the DEA suggests that stable isotope and genetic studies will be adequate to assign actual migrants taken for falconry to specific management populations. We view this as either: 1) an unlikely scenario for genetics; 2) an unlikely scenario using existing stable isotope approaches; and 3) a scenario of unknown merit using the

stable isotope approach suggested herein. In this setting, it seems that governments should probably not be assured that either of these methods will produce valid information to assess how levels of falconry take in the US are related to specific management populations."

"Given the importance of the proposed stable isotope or DNA analysis of collected feathers to evaluating the effectiveness in the management guidelines to target take to robust populations, we recommend that feather analyses as described in the DEA be conducted immediately each year, beginning in year one, following the collection season and that this information be provided to all interested parties so that management/take policies can be amended for the subsequent year. We understand that there is currently some question as to the validity of the stable isotope method. We recommend that all proposed monitoring approaches be additionally evaluated and that the most reliable method be standardized and employed. The AFC requests that the FWS coordinate and pay for these collection, analysis, and evaluation efforts."

Response. Given the evolving understanding of the value and applicability of stable isotope analysis, the Service does not believe an annual evaluation of feather samples is warranted. Rather, the Service will require the collection of feathers from harvested peregrines for three years, during which time we hope some of the scientific questions about the potential analysis approaches can be resolved. At that time, if warranted based on contemporary understanding of the limitations of the technique, the Service will conduct appropriate analyses to assess the likely natal origin of harvested peregrines.

Issue. Several commenters objected to the U.S. moving forward in allowing harvest until the management authorities of all affected countries supported the action.

"PEFA is one of Ontario's best known species at risk and the bird's recovery has had a high profile and been a high priority in Ontario for several decades. Recovery to date has resulted from significant collaborative efforts with a number of non-government organizations that remain cautious about the status of the bird due to their tremendous interest and investment in the program. The ministry anticipates negative reaction to potential harvest in the U.S. of young peregrines produced in Ontario."

"In all of this the Service has failed to accomplish or respect its original mandate. Worse, the failures of the Service have compromised the recovery effort in Canada. The Service is now poised to compound its errors. How can one consider a take of Canadian falcons when *anatum* is still a listed species and birds are still being hacked-back? We hack'em and you grab'em... is that the idea? Perhaps it is time for the Service to abandon its role as purveyor of fur, fish, and feather for a more modern vision: protector and preserver of wild life resources for future generations... Finally, I offer a word on the political ramifications of your pending rule. On behalf of all

Canadians I challenge your claim of divine right to manage non-American peregrine populations. You have a right to harvest all the American-born falcons you want to; but Canadians will not permit you to poach their birds."

"In conclusion, we appreciate the opportunity to review the document, but suggest that harvest of any age class of migrant peregrines originating in Nova Scotia should not be endorsed by the USFWS, or the Government of Canada based on this EA."

"Finally, we note that our neighbors and cooperators to the north, the Greenland Ministry of the Environment, have opposed the take of any of their first-year migrants because exploitation of this species is prohibited in Greenland. We suggest that concurrence from our neighbors to the north be sought prior to implementation of any policy which, as proposed, would draw heavily from their native populations. We would expect such treatment if the situation were reversed."

Response. The U.S. does not take its responsibility to coordinate management of transboundary species like the peregrine lightly. In the case of the harvest of migrant peregrines, the Service initiated contacts with Canada and Greenland in 1998, shortly in advance of receiving the initial proposal from AFWA. Based on informal coordination with the Canadian Wildlife Service and comments from Canadian provincial wildlife management authorities (in part), the Service imposed the following constraints on the harvest proposal: (1) we based take thresholds on known minimum, rather than extrapolated, population estimates; (2) we established extremely conservative harvest thresholds for low and mid-latitude Canadian *F. p. anatum* populations; (3) we have deducted Canada's existing migrant peregrine harvest and Mexico's estimated harvest from U.S. harvest thresholds for affected populations; and (4) we require all peregrines wearing research bands that are captured by falconers to be released. Greenland's expressed objection was to the take and personal possession of wildlife, not to the effects of the proposed harvest on Greenland's peregrine population, so no constraints have been imposed to reduce estimated take of peregrines originating from Greenland. We believe the additional constraints imposed on the harvest of migrant peregrines adequately address the legitimate biological concerns of Canadians, although we realize most provincial governments and Canadian citizens who commented will disagree. The U.S. respects the rights of Canada and Greenland to manage peregrines domestically as each sees fit, but as these birds enter into the U.S., Canada and Greenland must respect the U.S.'s rights to do the same, so long as the use of peregrines by the U.S. does not compromise the health of affected populations. The Service believes the extremely conservative nature of the proposed harvest will ensure that it poses no risk to the health of Canada's and Greenland's breeding peregrines.

"Because most migrant peregrines taken will be of northern origin, the USFWS should give extra consideration to Canadian and Danish (for Greenland populations)

concerns. *Expansion of take in the United States will put pressure on Canadian officials to allow take in Canada.*"

Response. The Canadian province of Saskatchewan has allowed harvest of a small number of fall migrating peregrines for several years. Therefore, the U.S. will not set an international precedent by allowing harvest and is not likely to put pressure on Canadian officials to allow take in Canada.

Issue. One flyway council requested standardized protocols for determining the sex of captured peregrines, and another was concerned about the feasibility of regulating sex ratio in the harvest.

"We appreciate the objective of sexual parity intake as described in the DEA, and encourage the FWS to provide to all interested parties: a standardized protocol for morphologically sexing peregrines in the field on the basis of their sexual size dimorphism, and a mechanism or protocol for monitoring and coordinating take of birds during the season, to achieve the desired parity of harvest."

"What is unclear is how the western states will regulate sex ratio harvest if migrants harvested in the preferred alternative area skew the sex ratio. This will require a particularly challenging level of coordination and management activity, as it will be necessary to engage in substantial interaction among the states both before and during take periods in a given year. We are concerned about the level of effort that might be required to address perceived risks associated with imbalanced sex ratio management even though we believe those risks to be minimal."

Response. Criteria acceptable to the U.S. Bird Banding Laboratory for aging and sexing peregrine falcons will be the standard for determining the sex of harvested peregrine falcons. The Service appreciates the flyway council's concerns about how to ensure relative sexual parity in the harvest, but we are reluctant to prescribe a particular approach that might prove overly constraining on the councils. However, because the harvest is of live birds that can be sexed and released if necessary, it would be practical for participating states to issue an equal number of permits for birds of each sex. The Service recognizes that not all permits issued will result in the harvest of a peregrine, and as such, ensuring sexual parity in the actual harvest would be impossible. Accordingly, the Service has clarified that the requirement for sexual parity will be measured against the harvest limit, not the actual harvest. The entire harvest could consist of females as long as the total number of peregrines harvested does not exceed 60% of the established harvest limit. Even if the entire harvest in any given year consists entirely of one sex, the 60% limit, coupled with the conservative nature of the harvest limits, should ensure that the harvest will have a negligible effect on peregrine populations.

Issue. One state requested that falconers be required to report details of the acquisition and disposition of captured peregrines.

“Given this, the Department supports Alternatives 2, 3, and 5 as proposed by the United States Fish and Wildlife Service (USFWS). This support is contingent on two items. First, is the timely reporting by the USFWS of captured banded birds to the state wildlife management agency of the state where the bird was produced. Second, is the reporting of the date and location of release of these birds to the same agency.”

Response. Falconers who capture peregrines will be required to submit a detailed report on paper or electronically on form 3-186A to the Service and to the pertinent state fish and wildlife agency. The 3-186A form will provide information on each peregrine captured or disposed of via release, transfer, or death.

Issue. One flyway council requested that the Service clarify the impact of the proposed migrant harvest on the existing harvest of nestling peregrines in the western United States.

“The Federal Register (FR) mentions reducing western states peregrine falcon (PEFA) nestling harvest. It is understood that this stipulation may be necessary to ensure that no more than 5 percent of any cohort is harvested in a given year per the 2004 FR Notice on the Take of Nestling PEFA. However, if the current harvest levels across the west are below the 5 percent mandate, the western states would like the final Environmental Assessment (EA) to clarify that states can maintain or even increase their current levels of nestling harvest as long as the projected 1 percent harvest of migrants is accounted for.”

Response. Under many of the alternatives, some migrants from the Western management population are likely to be captured by falconers. We take this harvest into account by reducing the resident harvest commensurately, as shown in Table 3. The flyway council is correct that the existing nestling harvest in the Western management population does not approach the harvest limits, so we do not anticipate this reduction to be problematic. However, under the new Alternative 7 the added flexibility will probably increase harvest rate for the Western management population, but not to overall levels that exceed a 5% harvest rate.

Issue. Some commenters felt that strict regulation of the peregrine harvest was unnecessary because there are few falconers and even fewer who will want to trap migrant peregrines.

“As a general matter, falconers are a very small group and are not likely to take peregrine falcons from the wild in large enough numbers to materially impact any of the management populations. Of the approximately four thousand falconers in the United States with FWS-issued permits, many have no intention to take peregrine falcons from the wild regardless of what rules the FWS promulgates. As a result, the