U.S. Fish and Wildlife Service

DRAFT ENVIRONMENTAL ASSESSMENT

TAKE OF RAPTORS FROM THE WILD UNDER THE FALCONRY REGULATIONS AND THE RAPTOR PROPAGATION REGULATIONS

DIVISION OF MIGRATORY BIRD MANAGEMENT

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ABSTRACT

- In this Draft Environmental Assessment we consider the take of wild raptors for use in falconry and in raptor propagation.

- We considered three alternatives for the falconry and raptor propagation regulations. In particular, at the request of the International Association of Fish and Wildlife Agencies, we considered elimination of the federal/state falconry permitting system and replacing it with a state permitting system operating within a prescribed federal framework.

- For dealing with take of nestling American peregrine falcons, this Environmental Assessment supplants the 2004 Final Revised Environmental Assessment on take of nestlings for use in falconry. The population analyses herein are based on a more comprehensive analysis of the effects of take on the wild population than was employed in the 2004 assessment. However, take of nestling peregrine falcons outside the 12 western states covered under the 2004 FEA is not covered in this assessment.

- Because it is a complicated issue deserving independent evaluation, take of first-year migrant peregrine falcons will be covered in a separate Environmental Assessment Take of migrant peregrines is not allowed until that assessment is complete.

- The preferred alternative is to establish upper limits on take of raptor species based on the published data for, and biology of, each species; to eliminate the federal permitting for falconry, but to leave the current captive propagation federal permitting program in place.

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INTRODUCTION

We prepared an Environmental Assessment (EA) in July 1988 to support establishment of regulations governing the use of most raptors in falconry and raptor propagation (Tautin 1988). In this updated assessment, we consider alternatives for major revisions of the regulations governing the two endeavors and effects of take of raptors on wild populations.

PURPOSE

In this EA we consider the effects of take of raptors from the wild for use in falconry and in raptor propagation. This assessment is intended to determine whether changes in the federal falconry and raptor propagation regulations governing take of raptors from the wild would comprise a major federal action significantly affecting the quality of the human environment.

We evaluated impacts on raptor populations resulting from take of nestlings and migrants across the entire U.S., which are governed by the falconry regulations at Title 50 of the Code of Federal Regulations (50 CFR) 21.28 and 21.29 and by the raptor propagation regulations at 50 CFR 21.30. We did not consider the take of eggs for raising birds for falconry, nor did we assess take for other purposes, such as research.

This EA does not consider the take of first-year migrant peregrine falcons (*Falco peregrinus*) for use in falconry, as was requested by the International Association of Fish and Wildlife Agencies in 1999. Analysis of the timing and movements of peregrines that nest in the far norther hemisphere during migration will be the crux of the evaluation of possible take of migrant peregrines. Those will be covered in a separate EA. Take of migrant peregrines is not allowed until that assessment is complete.

The Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d) does not allow take of bald eagles for falconry or for raptor propagation. Therefore, the bald eagle is not covered in this EA.

NEED FOR ACTION

Possession of a trained raptor of a species listed under 50 CFR 10.13 for falconry or propagation is authorized only under a permit issued under the federal regulations at 50 CFR 21.28 and 21.30. Falconry and raptor propagation have been considered to have very minimal impacts on the populations of species used in those activities (Tautin 1988).

Cooperation with other natural resources management agencies is important for the Fish and Wildlife Service (the Service). In particular, the Service works closely with state fish and wildlife agencies in management of migratory birds. The states, through the International Association of Fish and Wildlife Agencies, have requested that the Service consider a single permit system rather than the dual permitting system currently in use for falconry. That issue and changes in the raptor propagation regulations warrant evaluation for compliance with the National Environmental Policy Act of 1969.

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 U.S. 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 the actions are compatible with the provisions of the treaties (16 U.S. C. Section 704).

SCOPING AND PUBLIC PARTICIPATION

We published a Notice of Intent to Prepare an Environmental Assessment on falconry and raptor propagation regulations on 9 February 2005 (Federal Register 70:6993, Appendix 1), in which we sought suggestions for issues and alternatives to be considered in the Draft Environmental Assessment (DEA). We received 7 responses to the notice; three from individuals, one from an organization, and three from state agencies. The comments are in Appendix 2, and responses to comments are in the section "Issues from responses to the notice of intent to complete an environmental assessment."

After consideration of the responses, we prepared this DEA to address issues raised by the public and those we consider important. We will accept comments on this DEA for 60 days after we publish a Notice of its availability in the Federal Register.

ISSUES FROM RESPONSES TO THE NOTICE OF INTENT TO COMPLETE AN ENVIRONMENTAL ASSESSMENT

We reviewed suggestions and comments provided in response to our Notice of Intent to prepare an Environmental Assessment (Federal Register 70:6993, 2004). In this section we have grouped some comments and responded to those for which responses are possible.

Issue. *Need for a duplicate-state/federal permit system.*
Response. This issue is addressed through consideration of alternatives in this DEA.

Issue. *[The Service should evaluate] the benefits and impacts of the proposed arrangement where falconry within the federal system will be administered by the states which now allow falconry. The evaluation should consider not only each alternative's effect on the raptor resource, but also the effect on human resource requirements for the Federal and State agencies and the permittee.*
Response. Considering elimination of the federal falconry permit was requested by the IAFWA. Elimination of the federal permit will reduce the burden on migratory bird permits offices. We do not believe that the change will substantially affect the burden on most state permitting offices or permittees.

Issue. *In its approach to the current re-evaluation of the falconry and propagation regulations, the Service has deviated from the procedure used in connection with the previous (1985) re-evaluation. On that occasion, the Service first announced its intent to re-evaluate the regulations on January 4, 1985 and invited public comment. On June 24, 1986, the Service held a public meeting to determine the scope of issues to be covered and to consider an appropriate level of National Environmental Policy Act procedure to follow (Final Environmental Assessment -Falconry and Raptor Propagation Regulations, July 1988 at 1 (hereinafter, "1988 EA")). The same approach should have been used for the 2005 re-evaluation.*
Response. Subsequent to the 1985 Federal Register Notice, the Service concluded that an Environmental Assessment should be completed to determine if an Environmental Impact Statement was warranted for the falconry and raptor propagation regulatory changes. The 1988 EA was determined to be sufficient at that time; hence the completion of the EA and the associated Finding of No Significant Impact. We proposed no regulations changes that increase the environmental impact of the practices of falconry and raptor propagation in any way in the proposed regulations changes or in the alternatives considered below. Therefore, the procedures used for the current reevaluation are sufficient under the National

Environmental Policy Act and the Administrative Procedures Act.

Issue. *The time allowed for interested parties to formulate positions and communicate them to the Service has been severely compressed. We fully expect that the volume of responses received by the Service will be dramatically below those levels experienced previously, due in large part to the compressed time frame. If this is a conscious strategy to limit input on the issues at hand, we believe it is misguided.*

Response. We allowed 90 days for comments on the proposed regulations, and we will allow a 60-day period for comment on this Draft Environmental Assessment. We believe that the comment period provided for the proposed regulations allowed the falconry and raptor propagation communities a substantial opportunity to comment on the proposed regulations.

Issue. *Proposed revised falconry regulations were published on February 9, 2005 without the benefit of the public comment period that preceded publication of the 1986 re-evaluation, and proposed revised propagation regulations have apparently also been prepared without prior public input and are now awaiting publication. The proposed revisions to the falconry regulations are extensive and material. To the extent proposed revisions were formulated based on informal input received by Service representatives outside a public comment protocol, we suggest that the proposed revisions may not accurately represent the positions of the general falconry and raptor propagator communities. An accurate record of any informal input should be placed in the administrative record for this action. To the extent informal input was considered but is not included in the administrative record for this action, it is difficult to deem it as anything other than the functional equivalent of considering anonymous comments.*

Response. No public comment period is required prior to a proposed regulations revision; that is the purpose for publishing such proposals for comment. We proposed the major regulations change based on a request from the International Association of Fish and Wildlife Agencies, and we also made changes we considered improvements on the current regulations. We believe that the regulations comment period provided the conservation, falconry, and raptor propagator communities a substantial opportunity to comment on the proposed regulations - and all such comments are part of the Administrative Records for the regulations changes.

Issue. *"Compare and contrast falconry schools as a substitute for the mentorship program within the falconry regulations."*

Response. Falconry schools may provide some training in the art of falconry, but we do not consider them to be a substitute for the apprenticeship program in any way. Attendance at a falconry school confers no experience on an individual that substitutes for time spent as an apprentice falconer. See Migratory Bird Permit Memorandum Number 4 at http://www.fws.gov/permits/ PoliciesHandbooks/PoliciesHandbooks.shtml, and click on "Falconry Education Programs" for the pdf file.

Issue. *"Analyze the use of an adaptive management system for raptors recently removed from the list of threatened and endangered species, including both eyass and passage peregrines for falconry purposes. As a corollary, consider the use of any species designated as a so-called "sensitive species" by any federal agency. This evaluation should include the flexibility of adaptive management over the use of fixed numbers and percentages presented in the proposed falconry regulations to avoid the need for formal regulatory amendment to make changes for harvest purposes."*

Response. Adaptive management would require regular population assessments that the Service does not have a means to conduct. However, we have evaluated current population data in this assessment. Further, we propose to incorporate regular reviews of available take and population data to more closely approximate adaptive management of the species affected.

Issue. *"Evaluate the expansion of raptor propagation and its impact on the take of wild raptors as an alternative source of birds."*

Response. Raptor propagation has increased since the 1998 EA on falconry and captive propagation regulations (Tautin 1988). However, the effect of the expansion on wild populations has been small because there has been little take from the wild for propagation.

Issue. *"Evaluate the potential impact of the elimination of the Federal falconry permit in this EA as an area of contention. The evaluation should include not only each alternative's effect on the raptor resource, but also the effect on human resource requirements for the Federal and State agencies and the pemittee. Consider the following alternatives concerning this policy change.*

* *Continuing the permitting for falconry under the current joint State/Federal permit system as is practiced in most States (no change),*
* *Requiring only a State permit to practice falconry,*
* *Requiring only a Federal permit to practice falconry, and*
* *Requiring a separate State and Federal permits as is practiced in some States."*

Response. Most of these points are considered in the alternatives below. The choice of whether to participate in joint state/federal permitting under the current regulations has been up to each state. Requiring only a federal permit to practice falconry is not a viable alternative; the federal government cannot preclude implementation of state regulations governing either falconry or captive propagation. We believe that the neither the burden on permittees nor the burden on state agencies will increase under any alternative. We believe, in fact, that it is highly likely that the burden on permittees will decrease if the federal falconry permit is eliminated.

Issue. *"Prepare qualitative population assessments (similar to those prepared in the 1988 EA) for all populations of raptor species commonly used in falconry. Regional trends should be assessed where applicable. These assessments would be used to assist the States in managing local raptor populations and would support the Services management role under the MBTA."*

Response. We have done this in consideration of the alternatives below.

Issue. *"Examine the impact of falconry take on each species of raptor used in falconry. Specifically, analyze the falconry take data collected by the Service over the past 28 years. Determine the number of raptors taken for falconry and raptor propagation for each year broken down by species and age (eyas or passage)... This data would then be used to determine the impact on the various raptor populations."*

Response. This is done, in part, in the consideration of alternatives below. Take data for most of the 28 years are not easily compiled, and we used data for the most recent two years in the evaluation of the effects of take on raptor populations. We consider the 2003 and 2004 data to be representative of contemporary demand by falconers for wild-taken raptors.

Issue. *"The Environmental Assessment should properly assess the direct and indirect effects this proposal will have on wild populations."*

Response. We believe this is the key point of this EA. Likely effects on wild populations are covered extensively under the three alternatives. We believe that indirect effects of falconry and propagation take are negligible.

AFFECTED ENVIRONMENT

The federal falconry and raptor propagation regulations govern take of raptors from the wild for use in those activities. The species covered by the regulations include the Falconiformes (osprey, kites, hawks, eagles, and falcons) and the Strigiformes (owls) found in 50 CFR 10.13.

Falconers who take raptors from the wild are required to do so either by removing nestlings or by trapping birds during their first year of life. Each falconer must report to the USFWS and the respective state fish and wildlife agency all acquisitions and dispositions of raptors taken or otherwise acquired under his or her falconry permit (50 CFR 21). USFWS regional migratory bird permit offices input all data on raptors taken from the wild into the USFWS's permit tracking database. We used data for 2003 and 2004 from this database (Table 1) to assess the number of raptors removed from the wild by species for the purposes of our analyses. Some wild take may go unreported each year, but we believe unreported take is small, and such take is prosecuted.

There has been virtually no take from the wild for captive propagation. The number of raptors taken for falconry is small. In 2004, 1,068 raptors were reported taken for falconry in the U.S., about 61% of which were red-tailed hawks (USFWS data, Table 1).

Unintentional take associated with take for falconry also is possible. Conway *et al.* (1995) found that take of nestlings decreased the return rates of adult prairie falcons to aeries. The same may be possible for other species. 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. On the other hand, there may be some offsetting compensatory effects of harvest of raptors for falconry. Conway *et al.* (1995) found higher survival rates for nestlings left in aeries from which a sibling had been harvested.

"Most raptors are solitary, wide-ranging, and occur at low densities. Conventional methods of counting birds often are not practical for raptors" (Tautin 1988). There are no practical techniques or technologies available that will allow biologists to determine the numbers of nonbreeding adults in raptor populations on a continental scale. Therefore, the effects of the very limited take for falconry and raptor propagation can only be assessed indirectly. For the falconiform and strigiform species covered under 50 CFR 10.13, we used the analyses of Millsap and Allen (In Press) to assess the likely effects of take of wild raptors for use in falconry or in raptor propagation.

The following section summarizes distribution and status information for each species governed under 50 CFR 10.13 in the U.S. "PIF [Partners in Flight] U.S. and Canada population estimate," "accuracy rating," and "precision rating" refer to the population information compiled by Rich *et al.* (2004, Appendix 3). The PIF population estimates for the U.S. and Canada are based on analyses of Breeding Bird Surveys (BBSs) and arctic Canada estimates from 1966 through 2004, where applicable. The PIF methods, however, may be less suitable for raptors than for most other bird species. In particular, the visibility correction factor used by PIF to account for the possibility that half of the adult population is not detectible due to incubation or brooding is likely not applicable to most raptors because by the time Breeding Bird Surveys are conducted, raptors have either completed nesting or have large young. However, we believe that the PIF

Table 1. Reported Falconry Take of Wild Raptors in the U.S. in 2003 and 2004.

Species	Raptors Taken			
	2003	Percent of Total	2004	Percent of Total
Falconiformes				
Golden Eagle	4	0.43	6	0.56
Cooper's Hawk	67	7.27	72	6.74
Northern Goshawk	52	5.64	46	4.31
Sharp-shinned Hawk	15	1.63	15	1.40
Harris's Hawk	50	5.42	32	3.00
Ferruginous Hawk	7	0.76	6	0.56
Red-shouldered Hawk	3	0.33	3	0.28
Broad-winged Hawk	0	0	0	0
Red-tailed Hawk	527	57.16	645	60.39
Short-tailed Hawk	1	0.11	0	0
Rough-legged Hawk	0	0	0	0
American Kestrel	100	10.85	101	9.46
Merlin	48	5.21	52	4.87
Peregrine Falcon	1	0.11	18	1.69
Gyrfalcon	8	0.87	19	1.78
Prairie Falcon	31	3.36	42	3.93
Strigiformes				
Eastern Screech Owl	1	0.11	0	0
Western Screech Owl	0	0	3	0.28
Great Horned Owl	6	0.65	7	0.66
Snowy Owl	1	0.11	1	0.09
Totals	922		1,068	

population estimates provide the best available information on the population total for each species. We have included additional population information from other sources where appropriate. While it is certain not all raptors present in the surveyed area were detected, we have no basis for estimating what the true detection rate was for each species in each sampled vegetation type. Therefore, to be conservative, we halved the PIF estimates, eliminating any correction for detectability.

SPECIES WITH A HISTORY OF FALCONRY HARVEST

FALCONIFORMES

Golden Eagle

The Golden Eagle (*Aquila chrysaetos*) "inhabits a wide range of latitudes throughout the Northern Hemisphere and uses a variety of habitats ranging from arctic to desert." However, urbanization, agricultural development, wildfires, and intentional and accidental persecution

threaten the species and its most-used habitats (Kochert *et al*. 2002). Take of golden eagles for falconry is allowed under federal law only under specific conditions (16 U.S.C., Chapter 5A, Subchapter II, § 668a).

The Golden Eagle is a Species of Conservation Concern in the Great Basin, Northern Rockies, Southern Rockies/Colorado Plateau, and Badlands and Prairies BCRs (numbers 9, 10, 16, and 17, USFWS 2002). Braun *et al*. (1975) estimated a North American population of perhaps 100,000 individuals in the early 1970s. U.S. Breeding Bird surveys show no trend for this species (Significance Level [*P*]=0.39, Sauer *et al*. 2005). The current PIF-based U.S. and Canada population estimate is 40,000, with a "fair" accuracy rating and a "very high" precision rating. Good *et al*. (2004) estimated that there were just over 27,000 golden eagles in the four BCRs in which the species is of conservation concern (which comprise much of the western U.S.) in late summer and early fall in 2003.

Cooper's Hawk

The Cooper's hawk, (*Accipiter cooperii*), "a quintessential woodland hawk," is a "secretive, inconspicuous species, particularly in the breeding season and even in areas where it is a common nester" (Rosenfield and Bielefeldt 1993). This species breeds in much of the U.S., southern Canada, and northern Mexico.

The PIF-based U.S. and Canada population estimate for this species is 276,450, with a "fair" accuracy rating and a "very high" precision rating. Population information for this species is difficult to acquire. Rosenfield and Bielefeldt (1993) believed that recent data on reproductive success and numbers probably indicate a stable population. However, Breeding Bird Survey data show a 6.3% per year increase in the number of Cooper's hawks seen in the U.S. ($P<0.01$, Sauer *et al*. 2005).

Northern Goshawk

The goshawk (*Accipiter* gentilis) is a "large and aesthetically attractive" bird, and an opportunistic and aggressive hunter of "ground-oriented" prey (Tautin 1988). This largest of the North American accipiters occupies boreal and temperate forests throughout the holarctic, and the primary threat to goshawk nesting populations is said to be timber harvest (Squires and Reynolds 1997). Data on the populations of this species indicate that more information about population demographics is needed (Kennedy 1997, Squires and Reynolds 1997, Hoffman and Smith 2003).

There are differences of opinion about goshawks subspecies in North America, but only two are generally recognized. The northern goshawk (*A. g. atricapillus*) occupies most of the areas occupied by the species; the Queen Charlotte goshawk (*A. g. laingi*) is resident from Vancouver Island north through insular British Columbia and insular and mainland southeast Alaska to Glacier Bay (Squires and Reynolds 1997).

This is a Species of Conservation Concern in the Northern Pacific Rainforest and Sierra Madre Occidental BCRs (numbers 5 and 34, USFWS 2002). The PIF-based U.S. and Canada population estimate is 120,050, with a "fair" accuracy rating and "very high" precision rating. Breeding bird survey data for this species show no population trend ($P=0.48$, Sauer *et al*. 2005).

Sharp-shinned Hawk

The sharp-shinned hawk (*Accipiter striatus*), a "small, slender, feisty accipiter" (Bildstein and Meyer 2000), is a "widely dispersed and seldom-seen" nesting species across a large portion of temperate and subarctic North America and a wintering species in many other temperate locations. The species is abundant and easily obtained, but Tautin (1988) considered wild sharp-shinned hawks to be "nervous, high-strung and difficult to maintain."

The PIF-based U.S. and Canada population estimate for the sharp-shinned hawk is 291,500, with a "fair" accuracy rating and a "very high" precision rating. U.S. Breeding Bird Survey data

show no population trend for this species (P=0.13, Sauer *et al*. 2005).

Harris's Hawk

Bednarz (1995) called the Harris's hawk (*Parabuteo unicinctus*, AOU 1998) "perhaps the most enigmatic bird of prey in North America," stating that "Unlike other North American raptors, "Harris'[s] hawk groups employ one of the most sophisticated cooperative hunting strategies know in birds". In addition, they may be monogamous, polyandrous, and sometimes polygynous. In many locations in the U.S., Harris's hawks may breed year-round.

Harris's hawk populations in the U.S. are scattered across Arizona, New Mexico, and Texas. This range is reduced from that occupied early in the 1900s. This is a Species of Conservation Concern in the Chihuahuan Desert BCR (number 35) in southern New Mexico (USFWS 2002). The PIF-based U.S. and Canada population estimate for the species is 19,500, with a "poor" accuracy rating and a "good" precision rating. Breeding Bird Survey data show a 5.5% per year decline in observed Harris's hawks ($P < 0.01$, Sauer *et al*. 2005).

Tautin (1988) noted that "The Harris'[s] hawk's popularity has grown considerably in recent years... They are handsome, versatile birds, good hunters and easy to train and care for."

Ferruginous Hawk

The ferruginous hawk (*Buteo regalis*) is, as quoted by Bechard and Schmutz (1995) "a splendid hawk, the largest, most powerful, and grandest of our buteos, a truly regal bird" (Bent 1937). The ferruginous hawk can be found across much of the western U.S. at different times of the year.

The species' breeding range includes much of the western U.S., from southernmost Canada between the Great Plains and Rocky Mountains. south to northern Arizona and New Mexico (Olendorff 1993). Ferruginous hawks primarily winter in grassland and shrubsteppe habitats from northern California, western and southern Nevada, southern Wyoming, and parts of Arizona, New Mexico, Texas, Oklahoma, Kansas, Nebraska, and Colorado in the U.S., and into central and Baja Mexico.

There has been concern over the status of this species in North America. Olendorff (1993) attributed ferruginous hawk population declines to cultivation of rangelands, grazing, poisoning and controlling small mammals, mining, and fire in nesting habitats (Bechard and Schmutz 1995). The Fish and Wildlife Service was petitioned to list the species under the Endangered Species Act in 1991, though the petition was rejected due to insufficient data to warrant listing (USFWS 1992). It is considered a Sensitive Species by the Bureau of Land Management, and was designated as Threatened in 1980 and as Vulnerable in 1995 in Canada (Bechard and Schmutz 1995).

The ferruginous hawk is both a regional and national Species of Conservation Concern (USFWS 2002). Olendorff (1993) estimated a North American population of up to 11,330 individuals. However, Schmutz *et al*. (1992) estimated 14,000 individuals in the Great Plains alone. The PIF-based U.S. and Canada population estimate for the ferruginous hawk is 11,500, with a "fair" accuracy rating and a "very high" precision rating. Breeding Bird Survey data show a 2.2% per year increase in the number of ferruginous hawks observed (P=0.04, Sauer *et al*. 2005). However, migration data from Hoffman and Smith (2003) show stable or declining counts at five of six monitoring sites in the western U.S.

Red-shouldered Hawk

The red-shouldered hawk (*Buteo lineatus*) is found across much of the U.S. east of the Mississippi River, and along coastal California and southern coastal Oregon. This generalist species "favors extensive, mature, mixed deciduous-coniferous woodlands," though it may be found in other, less typical settings (Crocoll 1994). Forestry practices may have had more effect on this species than most other activities, in part because the species in a partial migrant; with

only individuals in the northernmost part of the species range migrating south for the winter (Crocoll 1994).

Breeding Bird Survey data are variable for the red-shouldered hawk, with some counts indicating population declines, but others showing increases. Overall, the data show a 2.7% per year increase in the number of red-shouldered hawks observed ($P<0.01$, Sauer *et al*. 2005). Bednarz *et al*. (1990) concluded that migration count data showed a long-term decline in the number of red-shouldered hawks observed at Hawk Mountain, Pennsylvania.

The PIF-based U.S. and Canada population estimate for the red-shouldered hawk is 411,000. The estimate has a "fair" accuracy rating and a "very high" precision rating.

Red-tailed Hawk

The red-tailed hawk (*Buteo jamaicensis*) "is one of the most widespread and commonly observed birds of prey in North America" (Preston and Beane 1993). This species is found across all of the contiguous U.S. (year round in most locations) and perhaps half of Alaska.

"Red-tails... are easy to obtain, handle, and train. Thus, they are good birds for novice falconers. Many experienced falconers also fly red-tails because they are large, powerful, general purpose birds well suited for large quarries" (Tautin 1988). This is the raptor species most commonly take from the wild to use in falconry.

The PIF-based U.S. and Canada population estimate for this species is 979,000, with a "moderate" accuracy rating and a "very high" precision rating. BBS data show a 2.4% per year increase in the number of red-tailed hawks observed ($P<0.01$, Sauer *et al*. 2005)

American Kestrel

The kestrel (*Falco sparverius*) is "the smallest, most numerous, and most widespread North American falcon" (Smallwood and Bird 2002). "[American] [k]estrels are small and unspectacular hunters, but as Tautin (1988) noted, kestrels are popular falconers' birds" (Tautin 1988). The kestrel is one of the limited number of raptor species that apprentice falconers may possess.

The American kestrel is a Species of Conservation Concern in three BCRs (USFWS 2002). Cade (1982) estimated a North American population of at least 1.2 million pairs. The PIF-based U.S. and Canada population estimate: 2,175,000, with a "moderate" accuracy rating and a "very high" precision rating. Migration data from Hoffman and Smith (2003) showed stable or diminished counts at five of six locations in the western U.S. However, other authors have concluded that the population is probably stable in western North America (Kirk and Hyslop 1998, Smallwood and Bird 2002, White 1994). Breeding Bird Survey data show a 0.5% per year decline in observations of American kestrels ($P=0.06$, Sauer *et al*. 2005).

Merlin

The merlin (*Falco columbarius*) is "a small, dashing falcon that breeds throughout the northern forests and prairies of North America, Europe, and Asia" (Warkentin *et al*. 2005). Tautin (1988) noted that "Its disposition, hunting performance and ease of training have made the merlin a traditional favorite among a specialized group of falconers."

Warkentin *et al*. (2005) noted that estimates of merlin numbers for Canada ranged from 10,000 to 100,000 pairs. The PIF-based U.S. and Canada population estimate is 325,000, "fair" accuracy rating and a "very high" precision rating. Western U.S. migration data in Hoffman and Smith (2003) indicated "at least stable patterns and usually strong increases through 1998" for this species. Breeding Bird Survey data show an 11.5% per year increase ($P<0.01$) in observations of merlins (Sauer *et al*. 2005).

Peregrine Falcon

Tautin (1988) reported that the peregrine falcon is the "premier falconer's bird" because peregrines are swift, superb hunters and are easy to work with. The peregrine 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.

In North America, the Peale's falcon (*Falco peregrinus pealei*) is a year-round resident of the northwest Pacific coast from northern Washington through British Columbia to the Aleutian Islands. The Arctic peregrine falcon (*Falco peregrinus tundrius*) nests in the tundra of Alaska, Canada, and Greenland, and is typically a long-distance migrant, wintering as far south as South America. The American peregrine falcon (*Falco peregrinus 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 U.S. to Baja California, Sonora, and the highlands of central Mexico. American peregrine falcons that nest in subarctic areas generally winter in South America, while those that nest at lower latitudes exhibit variable migratory behavior; 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). Because of the decline, the American peregrine falcon was added to the list of endangered and threatened wildlife and plants in 1970 (Federal Register 35:8491-8498).

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. 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 (Federal Register 64:46542-46558. By 2002, White *et al.* (2002) estimated that there were over 2000 pairs of American peregrine falcons breeding each year in the U.S. Published migration 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 U.S. (Hoffman and Smith 2003). This is supported by a 6.8% per year increase ($P=0.06$) in the number of peregrine falcons seen on Breeding Bird Surveys. The increase in the U.S. was 8.9% per year for that period ($P=0.04$, Sauer *et al.* 2005).

The peregrine is a species of conservation concern at both the regional and national levels. The PIF-based U.S. and Canada population estimate for the peregrine falcon is 138,000, with a "poor" accuracy rating.

We considered take of nestling American peregrine falcons in 2003 and 2004. The population in 11 contiguous states and Alaska (the states in which take was considered) was believed to include at least 3114 nesting pairs (USFWS 2004). Population data and modeling in the Environmental Assessment demonstrated that a take of 5% of the nestlings in the 12 western states would not significantly affect the population, and would likely not even be observable, due to the proportion of nonbreeding adults in the population.

<u>Gyrfalcon</u>

The gyrfalcon *(Falco rusticolus) is* "the acknowledged king of falconers [sic], a bird prized the world over. It is the largest of falcons, beautiful, swift, persistent in change, and remarkably easy

to tame" (Tautin 1988). Gyrfalcons are widely but thinly distributed across Alaska, northern Canada, and coastal Greenland. The gyrfalcon breeds in the far north, and only moves into the northern U.S. in fall and winter, with occasional occurrences as far south as the middle of the continental U.S. (Clum and Cade 1994).

The PIF-based U.S. and Canada population estimate for the gyrfalcon in North America is 27,500, with a "guesstimate" accuracy rating. Cade (1982) estimated approximately 15,000 to 17,000 pairs worldwide.

Prairie Falcon

The prairie falcon (*Falco mexicanus*) in found across much of the arid lands in the western U.S. and southwestern Canada "where cliffs or bluffs punctuate open plains and shrub-steppe deserts" (Steenhof 1998). This is the most restricted breeding distribution of North American falcons, but it "is often common where it does occur in the arid and semi-arid deserts and steppes of western North America (Cade 1982).

The prairie falcon is the most easily obtained large falcon. "Though less predictable and more difficult to work with than the peregrine, the prairie falcon is popular because of their accessibility and hunting performance on game birds. Prairie falcons are hardy, and they reproduce well in captivity, making them popular among propagators as well as falconers" (Tautin 1988).

The prairie falcon is a regional and national Species of Conservation Concern (USFWS 2002). The PIF-based U.S. and Canada population estimate for the prairie falcon is 17,500, with a "fair" accuracy rating and a "very high" precision rating. Steenhof (1998) reported an estimate of a minimum 4,273 pairs. "[T]he available evidence suggests that Prairie Falcon populations in the Intermountain- Rocky Mountain region are probably stable to increasing overall, but regional variation in the status of local breeding populations may be pronounced (Hoffman and Smith 2003). The Breeding Bird Surveys produced no trend ($P=0.38$) in the number of prairie falcons seen (Sauer *et al*. 2005).

STRIGIFORMES

Eastern Screech-Owl

The eastern screech-owl (*Megascops asio*, Banks *et al*. 2003) is widely distributed east of the Rocky Mountains, from the edges of the boreal forest to northeastern Mexico (Gelbach 1995). The PIF-based U.S. and Canada population estimate for this species is 369,500, with a "good" accuracy rating and a "very high" precision rating. Breeding Bird Survey data show no trend ($P=0.28$) for this species (Sauer *et al*. 2005).

Western Screech-Owl

This species, *Megascops kennicotti*, (Banks *et al*. 2003) is a common owl of north-central and northwestern Mexico, the western U.S., and coastal British Columbia, though there are concerns about decline of the population due to habitat loss (Cannings and Angell 2001). The PIF-based U.S. and Canada population estimate for this species is 270,000, with a "guesstimate" accuracy rating and a "good" precision rating. Breeding Bird Survey data show an 8.8% per year decline ($P=0.09$) for this species (Sauer *et al*. 2005).

Great Horned Owl

The Great Horned Owl (*Bubo virginanus*) is a "large, powerful, and long-lived" owl "adapted by its anatomy, physiology, and behavior to survive in any climate but arctic-alpine regions." It is found in many habitats, and has "the most extensive range, the widest prey base, and the most variable nesting sites of any American owl" (Houston *et al*. 1998).

Though widespread, the great horned owl is relatively sparsely distributed. The PIF-based U.S.

and Canada population estimate for the species is 1,139,500, with a "fair" accuracy rating and a "very high" precision rating. The data from Breeding Bird Surveys indicate a stable population for this species ($P=0.94$, Sauer *et al*. 2005).

Snowy Owl

This well-known, large, northern owl *Bubo scandiaca*) breeds in open terrain in the far north in both the eastern and western hemispheres. It is occasionally found to the northern U.S. in winter, and occasionally farther south (Parmelee 1992). The PIF-based Canada population estimate for the snowy owl is 72,500, with a "poor" accuracy rating.

SPECIES WITHOUT A HISTORY OF FALCONRY HARVEST

FALCONIFORMES

Osprey

The osprey (*Pandion haliaetus)* is a widespread raptor of coastal and lake habitats, found across much of northern North America in the nesting season, and much of the eastern U.S. coast year-round. Poole *et al*. (2002) reported that there are 20,000 or more nesting pairs in the U.S. and Canada, perhaps even 19,000 pairs in the contiguous U.S. alone. Migration counts and other survey data indicate that the osprey has continued to grow since the ban on DDT (Hoffman and Smith 2003). The PIF-based U.S. and Canada population estimate is 106,000, with a "fair" accuracy rating and a "high" precision rating. Breeding Bird Survey data show a 6.3% per year increase for this species ($P<0.01$, Sauer *et al*. 2005).

The osprey is the only North American raptor that eats almost exclusively fish captured live. It has little interest for falconers, and we are not aware of any use of ospreys in falconry or raptor propagation.

American Swallow-tailed Kite

A bird of "extraordinary aerial grace" (Meyer 1995), the American or northern Swallow-tailed Kite (*Elanoides forficatus forficatus*, Monroe *et al*. 1995) formerly occurred throughout the south-central U.S. north to Minnesota. It is now found in the U.S. in large numbers in the nesting season only in Florida, though it occurs from coastal South Carolina south to Florida and west to Louisiana. By mid-August, this species migrates south to winter. It has disappeared from most of its historic range in the U.S. Although its numbers in Florida show an increase, destruction of nesting, foraging, and roosting habitat is a constant threat (Meyer 1995, USFWS 2002). Habitat destruction on the species' wintering grounds and migration routes in Central and South America, coupled with heavy use of pesticides in these areas, pose additional threats. It is a both a regional and national Species of Conservation Concern (USFWS 2002).

The PIF-based U.S. population estimate for the species is 3,750, an estimate with a "fair" accuracy rating (Rich *et al*. 2004). This is comparable to the 3,200 to 4,600 individuals Meyer (1995) reported as a reasonable population estimate. Breeding Bird Survey data show a 4.4% per year increase in the number of Swallow-tailed kites observed ($P=0.02$, Sauer *et al*. 2005).

Black Kite

The Black Kite (*Milvus migrans*) is an extraterritorial species not found in the continental U.S., and only as an accidental in the Mariana Islands and on Sand Island in Hawaii (AOU 2000). There is therefore no PIF U.S. and Canada population estimate for the species.

White-tailed Kite

This species (*Elanus leucurus*, Monroe *et al*. 1993) includes the Black-shouldered Kite (*Elanus caerulus*) formerly listed as an MBTA-protected species (50 CFR 10.13). The white-tailed kite is found in open grasslands and savannah-like habitats. It has expanded its range in the western U.S. since the early twentieth century, and it is now found in Florida, Alabama, Louisiana, Texas,

Arizona, California, Oregon, and Washington (Dunk 1995, NatureServe 2005). However, its populations in many locations have declined in the last two decades (Dunk 1995).

The PIF-based U.S. and Canada population estimate for the white-tailed kite is 26,500 birds, with a poor accuracy rating but good precision for the estimate. Breeding Bird Survey data show a no trend in the number of White-tailed Kites seen ($P=0.29$, Sauer *et al*. 2005).

Hook-billed Kite

The range of the Hook-billed Kite (*Chondrohierax uncinatus*) extends though a large portion of Central and South America. In the U.S., it is resident only in southern Texas. The PIF-based U.S. and Canada population estimate for the species in the U.S. is no more than 1,000, with a "guesstimate" accuracy rating. This species is not taken for falconry or captive propagation.

Mississippi Kite

The Mississippi Kite (*Ictinia mississippiensis*) is a "sleek, acrobatic, crow-sized raptor" that "breeds in the southern Great Plains, limited areas of the Southwest, and southern states along the Mississippi River and east of it" (Parker 1999). It is a Species of Conservation Concern in the Edward's Plateau and Southeastern Coastal Plain Bird Conservation Regions (BCRs, USFWS 2002, Appendix 4). The PIF-based U.S. population estimate is 95,000, an estimate with a "fair" accuracy rating. Breeding Bird Survey data show no population trend for this species ($P=0.76$, Sauer *et al*. 2005).

Snail Kite

The snail kite (*Rostrhamus sociabilis*), is found from southern Mexico to northern Argentina. In the U.S. it is found only in Florida. Sykes *et al*. (1995) state that the snail kite "ranks among the most specialized of the world's falconiformes." This species feeds almost exclusively on freshwater apple snails (*Pomacea paludosa*) in Florida.

The Everglade snail kite is endangered in the U.S. (Federal Register 32:4001, 1967). The PIF-based U.S. and Canada population estimate for the snail kite is no more than 10,000, with an "accurate" accuracy rating and a "very low" precision rating. Based on population data summarized by Sykes *et al*. (1995), we believe that the actual number is probably no more than 2,000.

The Everglade snail kite is not taken for falconry or captive propagation. Take of the species for falconry or raptor propagation is not likely to be considered while it is listed as endangered.

White-tailed Eagle

The white-tailed eagle (*Haliaeetus albicilla*) is a casual visitor to the Aleutian Islands and to the northern Atlantic coast in the U.S. There is no PIF-based U.S. and Canada population estimate for the species.

Steller's Sea-Eagle

There is no PIF-based U.S. and Canada population estimate for Stellar's Sea-Eagle (*Haliaeetus pelagicus*), which is casual or accidental in the Hawaiian Islands and Alaska (AOU 1998).

Northern Harrier

The northern harrier (*Circus cyaneus*) is the only member in North America of the cosmopolitan genus *Circus*. It is "the most northerly breeding and most broadly distributed of all harriers, and is a long-distance migrant throughout much of its range. Its degree of sexual dimorphism in plumage and its propensity for polygyny are exceptional among birds of prey" (MacWhirter and Bildstein 1996).

The northern harrier is a both a regional and national Species of Conservation Concern (USFWS 2002). Johnsgard (1990) estimated the winter population in Canada and the U.S. to be 111,500 birds, based on extrapolation of Christmas Bird Count data (MacWhirter and Bildstein

1996). The PIF-based U.S. and Canada population estimate is 227,500, with a "fair" accuracy rating and "very high" precision rating. Breeding Bird Survey data for the northern harrier show a 1.3% per year decline ($P<0.01$, Sauer *et al*. 2005).

Asiatic Sparrow Hawk

There is no PIF-based U.S. and Canada population estimate for the Asiatic sparrow hawk (*Accipiter gularis*), which is found in Japan and the western Pacific. This species is not taken for falconry or captive propagation.

Common Black-hawk

In the U.S., the common black-hawk (*Buteogallus anthracinus*)is a large obligate riparian-nesting hawk species found in New Mexico, Arizona, and extreme southwestern Utah. The species prefers "remote, mature gallery forest corridors associate with perennial streams" (Schnell 1994).

The common black-hawk is a Species of Conservation Concern in the Sierra Madre Occidental and Chihuahuan Desert BCRs (numbers 34 and 35, USFWS 2002). The PIF-based population estimate for the species is 1,000,000, with no more than 1% of the population, or about 10,000 birds, found in the U.S. The population estimate has a"guesstimate" accuracy rating and a "very low" precision rating. Information in Schnell (1994) leads us to estimate a U.S. population of about 300 nesting pairs, or perhaps 1,000 birds in the U.S.

Broad-winged Hawk

The broad-winged hawk (*Buteo platypterus*) is a small buteo and a common breeding species across much of northeastern and northcentral North America. Broad-winged hawks migrate completely out of their breeding range in the fall; wintering in very southern Florida, Mexico, and Central and South America. Goodrich *et al*. (1996) reported that reforestation in the northeastern U.S. "may have increased breeding habitat for this species" in the last century. Wintering habitats for the species, however, may be diminishing.

The PIF-based U.S. and Canada population estimate for the broad-winged hawk is 864,000, with a "fair" accuracy rating and a "very high" precision rating. Migration counts in eastern Mexico "provide a minimum estimate of *B. p. platypterus*" of 1.7 million birds. Migration counts in the U.S. indicated a possible population decline in the east, but stable numbers in the central U.S. (Goodrich *et al*. 1996). BBS data show a 2% per year increase for broad-winged hawks ($P=0.01$, Sauer *et al*. 2005). Migration counts in the western U.S. suggest that this species is expanding its range there (Hoffman and Smith 2003).

Gray Hawk

Asturina nitida (Banks *et al*. 1997), the gray hawk, is found from Paraguay and Argentina to the extreme southwest U.S. in Texas and Arizona. In Texas the gray hawk is found along streams and rivers of the Rio Grande watershed; in Arizona the species is found along the Gila River watershed (Bibles *et al*. 2002).

This is a Species of Conservation Concern in the Sierra Madre Occidental BCR (number 34, USFWS 2002). The PIF-based population estimate for the species is 1,000,000, with no more than 1% of the population, or about 10,000 birds, found in the U.S. The estimate has a "guesstimate" accuracy rating and a "low" precision rating. Our interpretation of the population information from Bibles *et al*. (2002) is that the U.S. population probably only numbers in the hundreds.

Hawaiian Hawk

The Hawaiian hawk (*Buteo solitarius*) is endemic to the island of Hawaii, and is listed as endangered there (Federal Register 32:4001, 1967). It is the only resident hawk in the Hawaiian archipelago (Clarkson and Laniawe 2000). The population of this species is probably several thousand (Federal Register 58:41684-41688, 1993). Hawaii has not promulgated falconry

regulations, and this species is not taken for falconry or captive propagation. Further, no take of the species for falconry or propagation is likely to be considered while it is listed as endangered.

Rough-legged Hawk

This species (*Buteo lagopus*) "has an extensive panboreal breeding range, with populations in taiga and tundra regions of both the Old World and the New World. In North America, Rough-legged hawks breed in tundra or taiga in arctic and subarctic Alaska and Canada and migrate across the boreal forest to winter in open country of southern Canada and the northern U.S." Rough-legged hawks probably limited in distribution and numbers in many areas by the availability of suitable cliff nesting sites (Bechard and Swem 2002).

Palmer (1988) suggested that the rough-legged hawk may be one of the most abundant raptor species in the world. The PIF-based U.S. and Canada population estimate for Rough-legged hawks is 132,500, with a "poor" accuracy rating. Christmas Bird Count data indicate that Rough-legged hawk wintering population consists of about 50,000 birds south of Alaska and the Canadian territories; maximum densities occur in Montana and Idaho, with 5,250 and 3,650 wintering individuals, respectively (Johnsgard 1990).

Short-tailed Hawk

The short-tailed hawk (*Buteo brachyurus*) is "one of the rarest and least-studied birds in the U.S." (Miller and Meyer 2002). In the U.S., it breeds only in peninsular Florida. Outside the U.S., it occurs from northern Mexico to northern Argentina, Paraguay, and southern Brazil (Miller and Meyer 2002).

This is a Species of Conservation Concern in the Southeastern Coastal Plain and Peninsular Florida BCRs (numbers 27 and 31, USFWS 2002). The PIF-based U.S. and Canada population estimate is no more than 50,000, with a "guesstimate" accuracy rating. This estimate, however, is likely extremely optimistic. The U.S. population actually is probably less than 1000 (Miller and Meyer 2002; Ogden 1988).

Swainson's Hawk

A highly gregarious species, the Swainson's Hawk (*Buteo swainsoni*) forages and migrates in flocks sometimes numbering in the thousands. Its movement through Central America has been described as among "the most impressive avian gatherings in North America, since the demise of the Passenger Pigeon" (Brown and Amadon 1968).

The Swainson's hawk is a both a regional and national Species of Conservation Concern (USFWS 2002). The PIF-based U.S. and Canada population estimate for this species is 230,500, with a "moderate" accuracy rating and a "very high" precision rating. England *et al.* (1997) reported that Swainson's hawks have declined significantly in parts of the western U.S.; and in the western Canadian prairie, reproduction has dropped since the mid-1980s, following a decline in its main prey species, Richardson's ground squirrel (*Spermophilus richardsonii*). Migration data presented by Hoffman and Smith (2003) showed that "the overall abundance of Swainson's Hawks probably increased in the Intermountain-Rocky Mountain region during the early to mid-1990s." Breeding Bird Survey data show no trend in the number of Swainson's hawks observed (P=0.38, Sauer *et al.* 2005).

White-tailed Hawk

The white-tailed hawk (*Buteo albicaudatus)* is "a relatively shy and unobtrusive hawk" found "in open to sparsely wooded, arid regions where other buteos are uncommon" (Farquhar 1992). Occupying discontinuous breeding areas from southern Texas to Argentina, it claims the widest latitudinal distribution (29°N to 44°S) of any buteo, and has successfully colonized several Caribbean islands (Farquhar 1992).

In the U.S., this species is found only in southern Texas. It is a Species of Conservation

Concern in the Gulf Coastal Prairie BCR (number 37) (USFWS 2002). The PIF-based U.S. and Canada population estimate is no more than 10,000, with a "guesstimate" accuracy rating and a "moderate" precision rating. However, Farquhar (1992) suggested that the U.S. population is less than 2000.

Zone-tailed Hawk

The neotropical zone-tailed hawk [(*Buteo albonotatus*)]is widely distributed in the New World. It breeds as far south as central South America, but reaches its northernmost limits in the southwestern U.S." (Johnson *et al*. 2000).

The PIF-based U.S. and Canada population estimate for the zone-tailed hawk is no more than 10,000, with a "guesstimate" accuracy rating and a "moderate" precision rating. Based on information summarized in Johnson *et al*. (2000), we believe the U.S. population is no more than 1,000.

Crested Caracara

The Crested Caracara (*Caracara cheriway*, Monroe *et al*. 1993, Banks *et al*. 2000) ranges from northern Mexico to Tierra del Fuego, in the U.S. it occurs only along the southern border in Texas and Arizona, and in Florida, where there is an isolated population in the south-central peninsula (Morrison 1996). The Florida population (C. c. *audubonii*) is listed as threatened (Federal Register 52:25229-25232, 1987).

There are very limited population data available for this species (Morrison 1996). The PIF-based U.S. and Canada population estimate is no more than 50,000, with a "guesstimate" accuracy rating and a "good" precision rating. The Florida population probably numbers in the hundreds at most. Breeding Bird Survey data show a 5.6% per year increase in the number of crested caracaras seen ($P<0.01$, Sauer *et al*. 2005).

Eurasian Kestrel

The Eurasian kestrel (*Falco tinnunculus*) is a casual visitor to the Aleutian Islands and on the Atlantic coast (AOU 1998). Therefore, there is no PIF-based U.S. and Canada population estimate for this species.

Aplomado Falcon

Falco femoralis, the Aplomado falcon, "inhabits lowland Neotropical savannas, coastal prairies, and higher-elevation grasslands from the southwestern U.S. south to Tierra del Fuego" (Keddy-Hector 2000). The northern aplomado falcon (*F. f. septentrionalis*) is endangered in the U.S. (Federal Register 51:6686-6690, 1986).

Data on the U.S. population are limited (Keddy-Hector 2000). The PIF-based U.S. and Canada population estimate is 100,000 over the entire range of the species, with less than 1%, or 1,000, in the U.S. This number has a "guesstimate" accuracy rating. Because this species is listed as endangered, there is no take for falconry or captive propagation.

STRIGIFORMES

Barn-Owl

The barn-owl (*Tyto alba*) "is among the most widely distributed of all land birds" (Marti 1992). It is found over most of the contiguous U.S., the Caribbean, and into northern South America. Nesting density of this species varies considerably with prey density and habitat.

The PIF-based U.S. and Canada population estimate for the barn-owl is 171,500, with a "guesstimate" accuracy rating and a "high" precision rating. Breeding Bird Surveys show no population trend ($P=0.63$) for this species (Sauer *et al*. 2005).

Flammulated Owl

The flammulated owl (*Otus flammeolus*) "is perhaps the most common raptor of the montane pine forests of the western U.S. and Mexico." "The species is apparently restricted to forests of commercially valuable trees, and timber management practices may influence its viability, although baseline population data are sparse and insufficient to model its population dynamics" (McCallum 1994).

The flammulated owl is a both a regional and national Species of Conservation Concern (USFWS 2002). The PIF-based U.S. and Canada population estimate for this species is 14,000, with "guesstimate" accuracy rating and a "very low" precision rating.

Whiskered Screech-Owl

The whiskered screech owl (*Megascops trichopsis*, Banks *et al*. 2003) inhabits montane woodlands and forests from southeastern Arizona and adjacent New Mexico to northern Nicaragua (Gelbach and Gelbach 2000). This is a Species of Conservation Concern in two BCRs (USFWS 2002). The PIF-based U.S. and Canada population estimate for the whiskered screech-owl is no more than 5,000, with a "guesstimate" accuracy rating and a "very low" precision rating.

Puerto Rican Screech-Owl

This species, *Megascops nudipes* (Banks *et al*. 2003), is not found in the contiguous U.S., and there is no PIF-based U.S. and Canada population estimate for it. There is no reported take of this species for falconry or propagation because Puerto Rico has not promulgated falconry regulations.

Northern Hawk-Owl

"One of the least-studied birds of North America," the northern hawk owl (*Surnia ulula*), is sparsely distributed across much of Alaska and boreal forest Canada (Duncan and Duncan 1998). It is occasionally found across southern Canada and the northern contiguous U.S. in winter. The PIF-based U.S. and Canada population estimate for the northern hawk-owl is 32,500, with a "poor" accuracy rating and a "good" precision rating.

Northern Pygmy-Owl

This species, *Glaucidium gnoma*, inhabits a range of habitats from Honduras through Alberta and coastal British Columbia in Canada (Holt and Petersen 2000). The PIF-based U.S. and Canada population estimate for the northern pygmy owl is 42,000, with a "poor" accuracy rating and a "high" precision rating. Duncan and Harris (1997) estimated that there were 10,000 to 50,000 breeding pairs in North America. The data from Breeding Bird Surveys show no trend for this species (P=0.69, Sauer *et al*. 2005).

Ferruginous Pygmy-Owl

The ferruginous pygmy-owl (*Glaucidium brasilianum*) is a permanent resident in the U.S. only in southern Arizona and extreme southern coastal Texas, though its range extends into Panama (Proudfoot and Johnson 2000). This is a Species of Conservation Concern in three BCRs (USFWS 2002). The PIF-based U.S. and Canada population estimate is no more than 100,000, with a "guesstimate" accuracy rating and a "very low" precision rating. Based on data summarized by Proudfoot and Johnson, we believe the U.S. population is no more than 2,000.

The cactus ferruginous pygmy-owl (*Glaucidium brasilianum cactorum*) was listed an endangered by the Service in Arizona in 1997 (Federal Register 62:10730-10747). However, the Service recently proposed to remove that population from the endangered species list (Federal Register 70:44547-44552, 2005).

Elf Owl

The smallest owl in the world, the elf owl (*Micrathene whitneyi*) is abundant in upland deserts

of Arizona and Sonora, Mexico. It is found in the U.S. along the Rio Grande in Texas, in southwestern New Mexico, and the southern half of Arizona (Henry and Gehlbach 1999). This is a Species of Conservation Concern in six BCRs (USFWS 2002). The PIF-based U.S. and Canada population estimate is 23,000. The estimate has a "guesstimate" accuracy rating and a "low" precision rating.

Burrowing Owl

In North America, the breeding range of the Burrowing Owl (*Athene cunicularia*), currently includes much of the western half of the U.S. and the extreme southern portions of the Canadian prairie provinces of Alberta and Saskatchewan, and parts of Florida. The Burrowing Owl's habitat is grasslands and deserts, commonly in association with animals such as the black-tailed prairie dog (*Cynomys ludovicianus*) (Haug *et al.* 1993). Individuals of the more northern populations migrate south for the winter, heading to southern and central California, southern Arizona, New Mexico, Texas, and central and western Mexico. The Florida Burrowing Owl subspecies occurs locally throughout much of Florida, including the panhandle, and on islands such as the Bahamas, Cuba, and the island of Hispaniola.

U.S. Burrowing Owl populations have generally been in a slow decline since the late 1800s. A recent status assessment revealed that only Idaho was the only state with an increasing population. The most severe declines appear to be in mixed-grass and short-grass prairies from Texas north to Alberta and Saskatchewan and west to the Rocky Mountains. In Florida the population is expanding (Millsap 1996). Populations in the Great Basin area and parts of southern California, Arizona, New Mexico, and Colorado appear to be increasing or stable.

Breeding Bird Survey data suggest no change in number of burrowing owls observed overall ($P=0.48$). However, data for Canada show a 13.3% annual decline in the number of burrowing owls observed ($P=0.02$, Sauer *et al.* 2005).

The burrowing owl is a regional and national Species of Conservation Concern (USFWS 2002). The PIF-based U.S. and Canada population estimate for the species is 310,000, with a "poor" accuracy rating and a "high" precision rating.

Spotted Owl

The Spotted Owl (*Strix occidentalis*) is "one of the most-studied and best-known owls in the world. This degree of scientific attention is the result of this owl's association with late seral stage conifer forests of high commercial value" (Gutierrez *et al.* 1995). The spotted owl is found across forests of far western North America and Mexico. It is fairly evenly distributed through the northern part of its range but has a more patchy distribution in southern California, the southwestern U.S., and Mexico (Gutierrez *et al.* 1995).

There are three spotted owl subspecies. The Northern Spotted Owl (*S. o. caurina*), is found as far north as southwestern British Columbia, along the Cascade Mountains in Washington, Oregon, and into northern California, and through coastal ranges in northern California. Gutiérrez and Barrowclough (2005) provided a summary of the distribution of the Northern spotted Owl in California based on mitochondrial DNA analyses. The northern spotted owl was listed as threatened in 1990 (Federal Register 55:26114-26194).

The California spotted owl (*S. o. occidentalis)* is found in the southern Cascade Mountains, the northern Sierra Nevada Mountains, and the western Sierra Nevada and Tehachapi Mountains into Kern County, California. It also is found locally east of the crest of the Sierra Nevada mountains and in other, often separated locations in central and southern California (Gutierrez *et al.* 1995). Gutiérrez and Barrowclough (2005) also updated information on the distribution of the California spotted Owl.

The Mexican spotted owl (*S. o. lucida*) is found from southern Utah and Colorado to

mountains in western Texas, and in mountain ranges in Mexico. The Mexican spotted owl was listed as threatened in 1993 (Federal Register 58:14248-14271).

The spotted owl is a Species of Conservation Concern in two BCRs (USFWS 2002). The PIF-based U.S. and Canada population estimate for the species is 5,250, with a "moderate" accuracy rating. Based on numbers reported by Gutiérrez *et al.* (1995), this number likely is conservative.

There can be no take of northern or Mexican spotted owls for falconry or raptor propagation without requisite endangered species permits. There has been no reported take for either purpose (USFWS data).

Barred Owl

The barred owl (*Strix varia*) is found in forested lands across much of North America." It is typically found in older forests; "a resident of deep forests, including swamps, riparian, and upland habitats" (Mazur and James 2000, Priestly 2005) This species has expanded its range into the Pacific Northwest in recent decades.

The PIF-based U.S. and Canada population estimate for the barred owl is 280,000, with a "fair" accuracy rating and a "very high" precision rating. The data from Breeding Bird Surveys show a 2.0% per year annual increase in the number of barred owls observed ($P<0.01$, Sauer *et al.* 2005).

Great Gray Owl

This species *(Strix nebulosa*) is found primarily in boreal forests, but is found in mountainous coniferous forests in the western U.S. (Bull and Duncan 1993). The PIF-based U.S. and Canada population estimate for the great gray owl is 16,000, with a "poor" accuracy rating and a "good" precision rating.

Long-eared Owl

Asio otus, the long-eared owl is a species of "open and sparsely forested habitats across North America and Eurasia (Marks *et al.* 1994). Populations of this species appear stable, but in some areas may have declined due to agricultural practices and reforestation.

The long-eared owl is a Species of Conservation Concern in the Prairie Hardwood Transition BCR (USFWS 2002). The PIF-based U.S. and Canada population estimate for the species is 18,000, with a "guesstimate" accuracy rating and a "good" precision rating.

Short-eared Owl

The short-eared owl (*Asio flammeus*) is one of the most widely distributed owls, and "inhabits marshes, grasslands, and tundra throughout much of North America" (Holt and Leasure 1993). Population data on this species are limited. The short-eared owl is a both a regional and national Species of Conservation Concern (USFWS 2002). The PIF-based U.S. and Canada population estimate for the short-eared owl is 348,000, with a "poor" accuracy rating and a "very high" precision rating. Breeding Bird Survey data show a 4.8% per year decline in observations of short-eared owls ($P=0.01$). In Canada, the decline has been 9.0% per year ($P=0.05$, Sauer *et al.* 2005).

Boreal Owl

The boreal owl (*Aegolius funereus*) inhabits boreal and subalpine forests across much of Canada in down into the southern Rocky Mountains in the western U.S. Hayward and Hayward (1993) stated that "concern exists for its populations in some areas, especially isolated montane populations south of continuous boreal forest."

The PIF-based U.S. and Canada population estimate for the boreal owl is 300,000. This estimate has a "poor" accuracy rating.

Northern Saw-whet Owl

The northern saw-whet owl (*Aegolius acadius*) is found only in North America. It is "one of the

commonest owls in forested habitats across southern Canada and the northern U.S." (Cannings 1993). It is a Species of Conservation Concern in the Appalachian Mountains BCR (USFWS 2002).

The PIF-based U.S. and Canada population estimate for the northern saw-whet owl is 960,000, with a "poor" accuracy rating. However, Cannings (1993) said that a conservative estimate of the population would be between 100,000 and 300,000 individuals."

ALTERNATIVES

As noted earlier, for peregrine falcons this assessment considers only take of nestling American peregrine falcons (*Falco peregrinus anatum*) in 12 western states, as was analyzed under a 2004 Environmental Assessment (USFWS 2004). Because it is a complicated issue deserving independent evaluation, take of first-year migrant peregrine falcons will be covered in a separate Environmental Assessment Take of migrant peregrines is not allowed until that assessment is complete.

Alternatives under this Environmental Assessment fall into two broad categories; effects on wild populations, and administrative issues. We considered combinations of these two issues.

ALTERNATIVE 1

No action. Take limits for falconry would not be established. Neither the dual federal/state permitting system for falconry nor the permitting system for raptor propagation would be changed. This is the no-action alternative.

ALTERNATIVE 2

Establish upper limits on take of raptor species based on the published data for, and biology of, each species; no change in falconry or captive propagation permitting. Under this alternative, we would base allowed take on published data and evaluations of the effect of take of falconry and raptor propagation. Harvest of juvenile raptors from the wild would be limited to levels that would not harm wild populations. Neither the dual federal/state permitting system for falconry nor the permitting system for raptor propagation would be changed.

ALTERNATIVE 3

Establish upper limits on take of raptor species based on the published data for, and biology of, each species; eliminate federal permitting for falconry by delegating such authority to the states within the boundaries of a clear federal framework; no change in the captive propagation regulations that would impact take of raptors from the wild. This is the preferred alternative. We would base allowed take on published data and evaluations of the effect of take for falconry and raptor propagation. Harvest of juvenile raptors would be limited to levels that would not harm wild populations. The current permitting for raptor propagation would be maintained.

ENVIRONMENTAL CONSEQUENCES OF THE ALTERNATIVES

ALTERNATIVE 1

Take limits for falconry would not be established. Neither the dual federal/state permitting system for falconry nor the permitting system for raptor propagation would be changed.

This alternative would have no environmental effect. In the 1988 EA on take of raptors for falconry and raptor propagation (Tautin 1988), we determined that the two-per-year limit on take of wild raptors for most falconers would have essentially no effect on wild raptor populations, and this has been the limiting factor in take for falconry in particular. This alternative would not

change the allowed take for falconry or the federal/state permitting for falconry, nor would it change the administrative burden for the federal government or the states.

ALTERNATIVE 2

Establish upper limits on take of raptor species based on the published data for, and biology of, each species; no change in falconry or captive propagation permitting. Under this alternative, we would base allowed take on published data and evaluations of the effect of take of falconry and raptor propagation. Harvest of raptors would be limited to levels that would not harm wild populations. Neither the dual federal/state permitting system for falconry nor the permitting system for raptor propagation would be changed, so this alternative would not mean a change in federal/state permitting for falconry or a change in the administrative burden for the federal government or the states. This alternative requires an assessment of the likely effects of take, which follows. The following discussion of this alternative is based on Millsap and Allen (In Press).

For the purposes of this discussion, harvest rate is the difference between annual survival of the harvested age-class without harvest and with harvest; in the case of eyas (nestling) and passage (first-year migrant) age classes, this equals the proportion of the annual cohort of young harvested by falconers. The maximum sustainable harvest rate is the greatest harvest rate that does not produce a decline in the number of breeding adults. The point of transition from sustainable take to take that could lead to reduction in the number of breeding pairs is the equilibrium harvest rate. Demographic parameters of interest are productivity (the mean number of young fledged per occupied nest site) and the juvenile, subadult (older than 1 year, but not old enough to typically be breeding), and adult annual survival rates (proportions alive at fledging time each year).

Evaluating the effects of take of wild raptors is not straightforward. Counts of raptor populations can be misleading, and frequently substantially underestimate actual population size. This is because for most stable raptor populations, the subadult and non-breeding adult components of the population may be much larger than the breeding population. This situation arises because nest sites are typically limiting in healthy populations, and only a proportion of adults can breed in any year. Non-breeding floaters (adults awaiting opportunities to occupy nest sites and breed) and subadults are not commonly counted through traditional surveys that focus on counts of nesting pairs and estimates of annual productivity. The presence of floaters in a population also has biological consequences. For example, competition between established breeders and floaters, both for nest sites and food, can reduce nesting success and perhaps survival. Cliff-nesting species such as golden eagles (in some environments), prairie falcons, and peregrine falcons are particularly disposed to limitations on nesting sites because suitable cliffs in good nesting locations can be rare. However, for other species, intrinsic factors such as territoriality impose similar upper limits on the numbers of pairs that can breed in a given environment.

METHODS

To assess how falconry harvest likely affects raptor populations under the complex demographic scenario outlined above, we used a deterministic matrix model that limited the number of adults that could breed annually to the number of available suitable nesting sites (Hunt 2003). The algebraic formulas used to compute equilibrium stage structure were given in Hunt (1998). Our modeling assumed there were 1,000 suitable breeding sites of equal quality, so 2,000 adults were allowed to breed and were assumed to fledge young at the rate of the population mean each year. We used the model to estimate population size and structure at

population equilibrium (Hunt 1998). We simulated the effects of falconry harvest by increasing first-year mortality in 1% increments.

We assessed actual harvest rates by estimating the proportion of the year-1 cohort removed from the wild by falconers in 2003 and 2004 using the harvest numbers in Table 1 and the population estimates from the "Affected Environment" section above. We modeled the effects of falconry harvest at different rates on closed raptor populations, each with 1,000 suitable breeding sites (i.e., only 2,000 adults were allowed to breed each year). We ran the models for 100 years using point estimates of mean values for productivity and juvenile, subadult (for species with delayed maturation) and adult survival from the peer-reviewed literature for eight species of raptors. We used the best demographic data available for our models, and gave preference to findings from long-term mark-recapture or radio-tracking studies. Such studies yield less biased estimates of juvenile survival rates than simple band recovery or mark-recapture analyses because they provide data on emigration of marked birds (Kenward *et al.* 2000). For species lacking intensive long-term demographic studies that determined emigration rates, we used the mid-points of ranges for estimates of demographic parameters reported in the applicable Birds of North America accounts.

We selected the following species for analyses because they are harvested regularly by U.S. falconers or they are biologically similar to U.S. species taken for falconry, but have better-documented demographic information available in the literature.

- The Eurasian sparrowhawk (*Accipiter nisus*) is biologically similar to the Cooper's hawk and sharp-shinned hawk. We used data from a marked population in Southern Scotland from 1971-1984 (Newton 1986).
- A radio-tagged and color-marked population of northern goshawks from the Baltic island of Gotland, Sweden, using demographic data from 1980-1987 (Kenward *et al.* 1999).
- The Harris's hawk, using demographic data from Bednarz (1995).
- The red-tailed hawk, using demographic data in Preston and Beane (1993).
- The golden eagle, using age-specific survival rate estimates from a long-term radio-tracking study in California by Hunt (2002), and composite productivity values from Kochert *et al.* (2002).
- The American kestrel using demographic data in Smallwood and Bird (2002).
- The peregrine falcon, using demographic data from a color-marked population in Colorado, USA, collected from 1973-2001 (Craig *et al.* 2004).
- The prairie falcon, using summarized demographic data in Steenhof (1998).

Our model is an oversimplification of what we would expect to see in nature because we fixed parameters that would likely shift to buffer declines. For example, as populations decline in size, one would expect to see both a decrease in age at first breeding and an increase in mean productivity as nest sites of lesser quality became unoccupied and interference competition relaxed (Ferrer and Donazar 1996, Newton and Mearns 1988). Our model also did not account for demographic or environmental stochasticity, nor did we account for potential lowered reproductive success of first-time breeders (Newton 1979), both factors that could affect population structure and growth rates. Despite these simplifications, we believe the models are sufficient to illustrate the basic impacts of harvest on wild raptor populations.

In our initial model runs, we incorporated harvest effects by decreasing first-year survival rates in 0.01 unit increments, which would be the case if all harvest was of passage raptors (nestling survival is not evaluated in telemetry studies). For comparison purposes, we also simulated an eyas-only and adult-only harvest of peregrine falcons by decreasing productivity values, and by increasing adult mortality values, by 0.01 unit increments, respectively. Response variables of

interest at population equilibrium after 100 years of harvest at the specified rates included resultant numbers of breeders, juveniles, subadults, and floating adults, lambda (the annual rate of population change if all breeding-age adults are able to breed and produce young at the rate of the population mean); and the ratio of nonbreeding adults to breeding adults. Changes in lambda are a useful gauge of the impacts of harvest in a population where growth is possible. This is applicable to peregrine falcons in the contiguous U.S. The floater-to-breeder ratio (Hunt 1998) is the more useful metric when the population is at equilibrium and all breeding sites are occupied.

We also developed Maximum Sustained Yield (MSY) curves with harvest rate as the variable of interest for golden eagles, peregrine falcons, and American kestrels. These three species represent the range of harvest potential based on the available data.

To estimate actual harvest rates, we divided the number of individuals of each species harvested by the estimated size of the juvenile population of each species. We used the average of the number of individuals of each species harvested in 2003 and 2004 as the numerator. We estimated the denominator by multiplying the overall population estimate for each species by an estimate of the proportion of the population that was less than 1 year old (and therefore subject to harvest). We based our estimate of the proportional size of the less than 1 year-old age class on the species-specific population structure from our models at the 0% harvest rate at population equilibrium. For species for which we lacked data to develop specific models, we used the model output for the species with the most similar life history characteristics. Estimates for sharp-shinned hawks and Cooper's hawks are from the model for the Eurasian sparrowhawk; estimates for the red-shouldered hawk, ferruginous hawk, great horned owl, and snowy owl are from the model for the red-tailed hawk; and the estimates for the merlin and Eastern screech-owl are from the model for the American kestrel (Table 2).

RESULTS

The modeling indicates that the sustainable falconry harvest varies among species depending on the quality of demographic data available; survival data from radio or satellite telemetry generally show higher values than those from band return or other mark-recapture methods, and these values have a great effect on the modeling.

Passage harvest models for the example raptor species at population equilibrium showed that at harvest rates below equilibrium levels, effects of harvest were primarily restricted to the subadult and floating adult components of populations (Figure 1). At higher harvest rates, floaters were absent because all adults were able to acquire breeding sites.

At the highest levels of harvest, substantial declines in numbers of breeding adults, as well as in overall population size, were predicted. The declines were related to the degree to which harvest rate exceeded the equilibrium. The sustainable harvest rates differed considerably, depending on the survival estimates for the species, but were greatest for a harvest of eyases and lowest for a harvest of adults. For example, for peregrine falcons, the impacts of harvest are proportional to the age of the cohort harvested, with nestling harvest having the least impact (Figure 2).

Maximum sustainable passage harvest rates for species with the demographic characteristics we evaluated ranged from 3% to 6% for species with limited demographic data available, compared to 9% to 41% for species with recent radio- or satellite-telemetry-based population data (Millsap and Allen, In Press). This is consistent with findings of many previous studies that show raptor populations are most sensitive to changes in adult mortality (Newton 1979). Changes in raptor populations in response to sustainable harvest are largely restricted to the subadult and

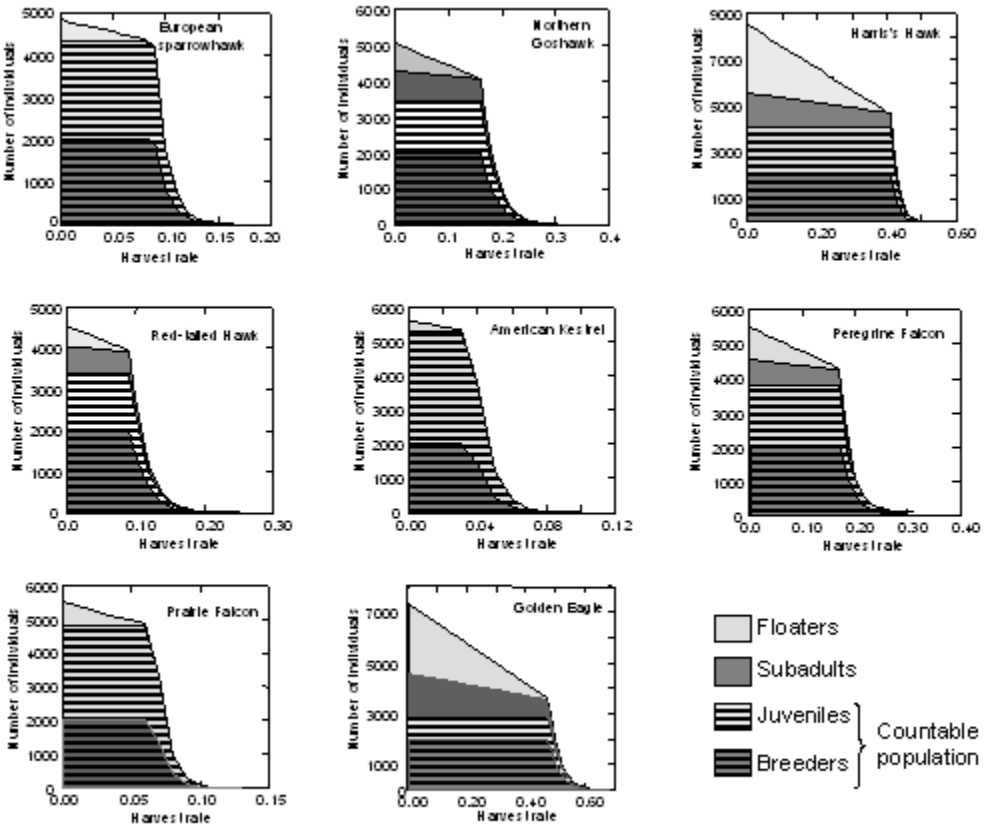


Figure 1. Estimated population structure of eight raptor species at various passage harvest rates (percent of juvenile cohort taken by falconers). The component of the population that can be accounted for through nest-site monitoring is cross-hatched. For all species, effects of harvest on populations below the maximum sustainable harvest rate are primarily in population segments that are not associated with nest sites. From Millsap and Allen (In Press).

floating adult components of the populations, neither of which can be readily monitored by traditional methods of counting breeding adults and young at nest sites. Overharvest would initially produce a decrease in the number of floating adults, which would likely increase the number of younger breeders at nests (Newton 1979, Ferrer *et al.* 2003), with an eventual decrease in nest site occupancy. For peregrine falcons, the models confirm that the impacts of harvest are proportional to the age of the cohort harvested, with nestling harvest having the least impact (Figure 3). We suspect a similar relationship exists for other species.

Previous attempts to estimate sustainable harvest rates for raptor populations have examined empirical data on rates of recovery of depleted populations, sustainability of populations under persecution (Kenward 1997) or, in one case, population responses to experimental harvest (Conway *et al.* 1995). The conclusions of those studies confirm our modeling - many raptor populations can sustain eyas or passage harvest rates of 10% to 20%, and sometimes higher.

Table 2. Population Data for Modeled Species.
Population size estimates are modified from Rich *et al.* (2004).

Species	Canada-U.S. Population	Proportion of Juveniles[1]	Number of Juveniles	Percent in U.S.[2]
Falconiformes				
Cooper's Hawk	276,450	0.50	138,225	60
Northern Goshawk	120,050	0.30	36,015	25
Sharp-Shinned Hawk	291,500	0.50	145,750	35
Harris's Hawk	19,500	0.25	4,875	100
Ferruginous Hawk	11,500	0.30	3,450	80
Red-Shouldered Hawk	410,850	0.30	123,255	95
Red-tailed Hawk	979,000	0.30	293,700	50
American Kestrel	2,175,000	0.60	1,305,000	45
Merlin	325,000	0.60	195,000	15
Peregrine Falcon	10,000[3]	0.30	30,001	25
Gyrfalcon	27,500	0.30	8,250	NA[4]
Prairie Falcon	17,280	0.50	8,640	95
Strigiformes				
Eastern Screech-Owl	369,600	0.60	221,760	99
Western Screech-Owl	270,100	0.60	162,060	85
Great Horned Owl	1,139,500	0.30	341,850	55
Snowy Owl	72,500	0.30	21,750	NA[4]

[1] The percent juveniles were estimated from observed population structure in species-specific population models at equilibrium. See text and Figure 1.

[2] Estimated from the applicable Birds of North America account.

[3] Estimate only for twelve western states in which take of nestling peregrine falcons is allowed.

[4] Not applicable. For this Arctic species the North American population value is appropriate.

The analyses assume that raptor harvest constitutes an irrevocable additive mortality effect on populations, which is conservative for two reasons. First, as noted earlier, some raptors taken from the wild by falconers are returned to the wild. Mullenix and Millsap (1998) reported that about 40% of falconer-harvested red-tailed hawks and American kestrels are intentionally or accidentally returned to the wild each year. Survival rates and fitness of these birds are unknown, but some almost certainly survive and return successfully to the wild population. For example, in Great Britain, the northern goshawk was reestablished as a breeding species from escaped falconry stock (Kenward *et al.* 1981). Second, Conway *et al.* (1995) found that nestling prairie falcons left in nests from which siblings were harvested had higher survival and breeding recruitment rates than nestlings from unharvested nests. This suggests that with eyas harvest, in at least some species, there may be a compensatory effect of harvest on nestling survival.

Figure 2. Change in floater-to-breeder ratio in peregrine falcons with increasing harvest rate in a hypothetical peregrine falcon population at population equilibrium, using demographic data in Table 2. Under these values, the maximum sustainable harvest rate is 3 times greater for an eyas-only harvest compared to a harvest of adults. From Millsap and Allen (In Press).

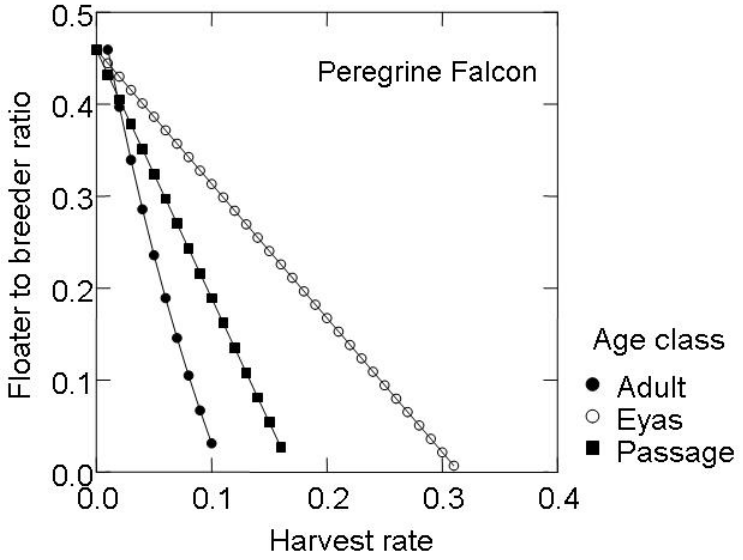
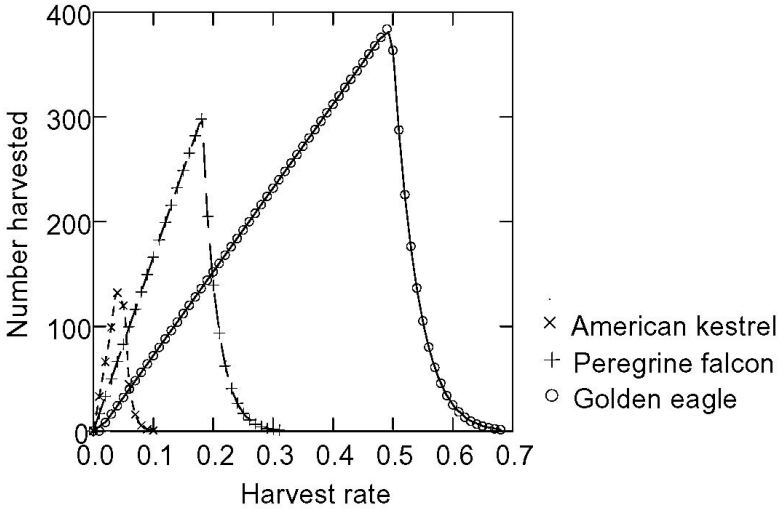


Figure 3. Harvest equilibrium curves for three species of raptors representing the range of harvest potential observed. Modeled harvest is of passage individuals, and models use the demographic data for each species from Table 1. From Millsap and Allen (In Press).



Though take has been very limited (Table 3), based on our evaluation, we believe that regulation of take of wild raptors for falconry and propagation should differentiate between species for which sound radio or satellite telemetry-based survival estimates are available and those for which such data are lacking. The modeling results also indicate that harvest rates should be conservative, given the impracticality of monitoring the effects of harvest on wild raptor populations. Finally, limiting take to eyas and passage raptors, as is currently the case for most species, reduces effects of harvest on populations.

Millsap and Allen (In Press) suggested that the sustainability of falconry harvest varies among raptor species in accordance with variations in vital rates - productivity and survival. A comparatively low relative harvest potential for several species (Eurasian sparrowhawk, red-tailed hawk, American kestrel, prairie falcon) was believed due largely to the underestimation of vital rates for these species because survival rates for them were derived from banding or marking studies that did not include unbiased correction for emigration. In contrast, vital rate estimates for goshawks, golden eagles, and to a lesser degree, peregrine falcons, were based on radio-tracking or marking studies that allowed for estimation and correction for emigration rates. Kenward *et al.* (2000) showed that banding and marking may greatly underestimate survival in raptors compared to findings from radio-tagging studies.

APPLICATION TO THIS ALTERNATIVE

Under this alternative, take of raptor species for falconry and for raptor propagation together would be limited. Take under this alternative would be limited to a maximum of 5% of annual production, or 50% of MSY, whichever is smaller. This conservative level of take is considerably less than MSY, yet it will satisfy current levels of demand (Tables 4 and 5). There are sufficient quality survival data available for the northern goshawk, the Harris's hawk, the peregrine falcon, and the golden eagle to allow take of 5% of the estimated production of young each year (Table 4). However, this assessment does not apply to take of nestling peregrines in any state partly or wholly east of 100° West longitude, nor does it apply to take of migrating peregrines outside Alaska. Take of peregrines in either circumstance will require an additional EA.

For the species in Table 4, harvest of up to 50% of MSY would be allowed. For the remainder of species for which suitable demographic data for modeling are not available (all other species listed in 50 CFR 10.13), harvest be would evaluated in depth if more than 3 of any species are taken from the wild in a single year.

Under this alternative, take of all species would be monitored each year using reports of harvest provided by falconers, and evaluated against population size estimates report in Table 2 to ensure harvest rates remained below the upper limits established in Tables 4 and 5. Harvests in 2003 and 2004 for all raptor species in the U.S. were well below the thresholds in this alternative. The harvest in these years was limited only by the two-bird per falconer limit on raptors that could be removed from the wild each year and an overall maximum possession limit of three birds. With approximately 4,250 falconers in the U.S. (USFWS data) and a potential harvest of up to almost 8,500 raptors, harvest has been well within the thresholds under this alternative.

TAKE OF GOLDEN EAGLES

Under this proposal, allowed take of golden eagles would differ from take of all other falconry species. Take of birds for falconry is governed under the Migratory Bird Treaty Act, but the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d) allows for take of golden eagles only under very specific circumstances, and does not specify ages of eagles that may be taken from the wild for use in falconry. This alternative provides that a master falconer with sufficient experience

Table 3. Harvest Data for Modeled Species.

Species	Number Harvested			Percent of U.S. Juveniles Harvested (Harvest Rate)
	2003	2004	Mean[1]	
Falconiformes				
Cooper's Hawk	67	72	70	0.088
Northern Goshawk	52	46	49	0.667
Sharp-Shinned Hawk	15	15	15	0.029
Harris's Hawk	50	32	41	0.841
Ferruginous Hawk	7	6	7	0.254
Red-Shouldered Hawk	3	3	3	0.003
Red-tailed Hawk	527	645	586	0.399
American Kestrel	100	101	101	0.017
Merlin	48	52	50	0.171
Peregrine Falcon	1	18	18[2]	1.778
Gyrfalcon	8	19	14	0.170
Prairie Falcon	31	40	36	0.433
Strigiformes				
Eastern Screech-Owl	1	0	1	0.000
Western Screech-Owl	0	3	2	0.001
Great Horned Owl	6	7	7	0.004
Snowy Owl	1	1	1	0.005

[1] Rounded to nearest whole number.

[2] Take of wild peregrine falcons for falconry was only authorized in Alaska in 2003; value for 2004 was used in the calculations.

Table 4. Take of Species in the 5% Category.

Species	Number of Juveniles	Percent in the U.S.	Allowed Take	Average Taken (Percent of Allowed Take)
Northern Goshawk	29,400	25	367	49 (13.35)
Harris's Hawk	4,875	100	243	41 (16.87)
Peregrine Falcon[1]	2,460	100	101	18 (17.82)

[1] Twelve western states only (USFWS 2004). Nesting population was considered to be 1,809 pairs, with productivity of 1.36 young per nesting pair. "Average taken" value is for 2004.

Table 5. Take Limits for Other Raptor Species Normally Taken for Falconry.

Species	Maximum Sustained Yield[1]	Allowed Take	Percent of Allowed Take Actually Taken in 2003-2004[2]
Falconiformes			
Cooper's Hawk	0.06	2,393	2.93
Sharp-Shinned Hawk	0.06	1,530	0.98
Ferruginous Hawk	0.01[3]	30	23.06
Red-Shouldered Hawk	0.01[3]	1,288	0.23
Red-tailed Hawk	0.09	6,608	8.87
American Kestrel	0.03	8,809	1.15
Merlin	0.01[3]	322	15.54
Gyrfalcon	0.01[3]	91	15.43
Prairie Falcon	0.06	249	14.44
Strigiformes			
Eastern Screech Owl	0.01[3]	2,414	0.04
Western Screech-Owl	0.01[3]	1,515	0.13
Great Horned Owl	0.01[3]	2,068	0.34
Snowy Owl	0.01[3]	239	0.42

[1] From Millsap and Allen (In Press).

[2] Based on the average take in 2003 and 2004.

[3] Insufficient survival data available, see text.

may, if his or her state allows it, take a golden eagle from the wild only in a depredation area certified by USDA Wildlife Services or a state animal damage control agency during the time the depredation area is in effect. This would likely mean a very small take of golden eagles is allowed. Take for falconry has been a very small proportion of the level of take that Millsap and Allen (In Press) suggested that the population could sustain.

Suggested language for this take is as follows.

> *You may capture a nesting adult golden eagle in a depredation area if a biologist representing the agency responsible for declaring the depredation area has determined that the eagle is preying on livestock. You also may take a nestling from the nest of an adult known to be preying on livestock.*

REEVALUATION OF POPULATION DATA

Given the conservative nature of the abundance estimates, and considering that most raptor populations tend to be fairly stable from year-to-year (Newton 1979), the approximate annual harvest rate estimates derived from known annual harvest divided by the estimated number of juveniles in Table 1 will identify species for which harvest might be approaching the thresholds identified above. Juvenile population size estimates for species with declining BBS trends would be

recalculated every 3 years, and that those for other species would be revised every 6 years, as suggested by Millsap and Allen (In Press).. The allowable level of harvest would be recalculated based on these revised population estimates.

CONCLUSION

We conclude that under this alternative it is not necessary to enact restrictions beyond those that already exist on falconry harvest unless harvest rates approach the target levels specified above for any species. This can be monitored by compiling actual harvest reports and comparing results to population estimates for each species on a range-wide scale in North America. Because take for falconry and captive propagation under this alternative is below the levels at which significant negative effects on any raptor population would occur, any environmental effects of selecting this alternative would be minimal.

Our assessment indicates take of wild raptors for falconry is very unlikely to have a significant impact on wild raptor populations in the U.S. Because of the limited participation in falconry, and because nearly half of all raptors used in the sport are produced through captive breeding and not taken from the wild (Peyton *et al*. 1995), we believe impacts are unlikely to increase. Only if the potential for impacts increases, either through substantial growth in the number of licensed falconers or an increase in harvest rates for a particular species, would additional safeguards such as further limitations on take be necessary.

ALTERNATIVE 3

Establish upper limits on take of raptor species based on the published data for, and biology of, each species; eliminate federal permitting for falconry, and do not change the captive propagation regulations that would impact take of raptors from the wild. Harvest of raptors would be limited to levels that would not harm wild populations. The authority for falconry permitting would rest with the states, subject to the requirements of the federal falconry regulations. The current permitting for raptor propagation would be maintained.

The biological effects of this alternative would be the same as those for alternative 2. Falconry and captive propagation take would continue to have no significant impact on wild populations.

Under this alternative, the federal falconry permit would be eliminated. In the U.S., 49 of 50 states have enacted falconry regulations. We do not expect the state of Hawaii to establish regulations for the practice of falconry. Because not all states have captive propagation regulations in effect, the federal permit for this activity would continue to be required.

The Service would retain responsibility for stewardship of raptors listed under 50 CFR part 10, even though we would authorize states to take over the administration of falconry permits. The Service would monitor management of state falconry programs and each State, Tribe, or Territory that permits falconry must maintain the following information in a database that would enable enforcement of this section. The state, tribal, or territorial database must be compatible with the database that we maintain for our purposes, and new additions to the database must be forwarded to us monthly.

(1) The current address of each person with a falconry permit.
(2) The classification of each person with a falconry permit--apprentice falconer, general falconer, or master falconer.
(3) The address of the falconry facilities of each person with a falconry permit.
(4) The Federal falconry identifier number assigned to each person with a falconry permit.
(5) Whether each permittee is authorized to possess a golden eagle.
(6) Information on the status of each person's permit: whether it is active, suspended, or

revoked.

We would retain the authority to review the falconry permitting, facilities inspections, and records of any State, or Tribe, or Territory that allows falconry. We may choose to review a State's falconry permitting for reasons such as, but not limited to, complaints from the public or law enforcement actions that suggest the need for a review; we also may suspend a State's, Tribe's, or Territory's certification. If, after reviewing the falconry permitting, we determine that the regulating entity has not issued permits or maintained records in accordance with the regulations, we would notify the State, Tribe, or Territory and allow two years for correction of permitting problems. The State, Tribe, or Territory must ensure that its inspections ensure that falconers' facilities meet the standards in this section, that permits are issued promptly, and that both applications and permits are complete and accurate.

Failure of the State, Tribe, or Territory to correct permitting problems would result in suspension of the State's, Tribe's, or Territory's falconry permitting authority. The decision may be appealed to the Director of the Fish and Wildlife Service by the State, Tribe, or Territory.

Our oversight of take of raptors would continue under this alternative through the implementation of electronic reporting on take of raptors from the wild that would allow assessment of take of all raptor species taken for use in falconry. If this alternative is selected, we would be able to assess take at the regional or state level. We would track the number and location of each raptor species taken, and would evaluate the effects of take for falconry on raptor populations. We expect that the electronic reporting would facilitate summarizing and analyzing the effects of take of raptors for use in falconry.

We do not believe that elimination of the federal falconry permit would alter the workload of the state wildlife agencies significantly. All states that allow falconry have some form of state falconry permitting in place. Under the proposed regulations, each state or tribe that permits falconry would be required to maintain the following information in a database that would enable enforcement of this section and facilitate accessibility of falconers' records across state boundaries. To aid states and tribes in compliance with this section, we would develop and maintain a national database that states can access and use to manage and report this information. States may use their own databases, but in these cases they would be required to submit electronic reports monthly that are compatible with, and can be uploaded into, the database that we would maintain.

Conversely, if this alternative is selected, sending state-issued permits to federal migratory bird permits offices for endorsement or for a corresponding federal permit would no longer be required. This should save time and work for the states.

CUMULATIVE IMPACTS

There are no additional environmental impacts under Alternative 1 because it would not change the current allowed take for falconry and raptor propagation in any way. We see no negative cumulative impacts due to selection of alternative 2 or alternative 3. Though habitat loss, contaminants, and other problems were cited as possible causes for concern for a number of the species considered in this DEA (see references in the Literature Cited), the cumulative impact of allowing take of raptors under alternatives 2 and 3 still are negligible. As noted in Millsap and Allen (In Press), the take of raptors for falconry and raptor propagation will have no discernible effect on nesting populations. The limits on take of raptor species from the wild under alternatives 2 and 3 limit take further than do the current regulations. Therefore, the impacts of these changes could only be positive.

NATIONAL ENVIRONMENTAL POLICY ACT COMPLIANCE

We reviewed this issue 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) and the Council on Environmental Quality regulations (40 CFR Part 1501), falconry and raptor propagation permitting do not warrant preparation of an EIS. In particular, based on analyses of the effects of take based on demographic data, we do not believe that falconry or propagation take should generate significant controversy over their very minimal environmental effects. Further, because falconry and raptor propagation have gone on for decades with negligible impacts on populations of raptors, the proposal is not a precedent-setting action with wide-reaching implications.

We believe that the analyses have shown that the effects of take for falconry and for raptor propagation as well as the proposed update and reorganization of the falconry and raptor propagation regulations will have very minor effects on raptor populations. Therefore, the proposed changes do not comprise a major federal action, and preparation of an environmental impact statement for the regulations changes is not warranted.

TRANS-BOUNDARY EFFECTS OF THE ALTERNATIVES

Though many of the species covered under this DEA are highly migratory, the effects on nestling populations are not significant. No alternative has any significant effect outside the U.S.

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PREPARER

This assessment was prepared by George T. Allen. A Certified Wildlife Biologist, Dr. Allen, has 20 years experience in wildlife research and management, with an emphasis on raptors.

ACKNOWLEDGMENTS

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APPENDIX 1

Notice of Intent to Prepare an Environmental Assessment

Federal Register/Volume 70, Number 26/Wednesday, February 9, 2005

DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

Migratory Bird Permits; Notice of Intent To Prepare an Environmental Assessment for Falconry and Raptor Propagation Activities

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Notice of intent to prepare an environmental assessment.

SUMMARY: The U.S. Fish and Wildlife Service (we or us) will prepare an updated draft environmental assessment of the activities of falconry and raptor propagation in the U.S. We seek suggestions for issues and alternatives to consider when doing so.

DATES: Send suggestions on topics for the environmental assessment by March 11, 2005.

ADDRESSES: You may submit comments by any of the following methods:

Agency Web Site: http://migratorybirds.fws.gov. Follow the links to submit a comment.

E-mail address for comments: Falconry and Propagation EA@fws.gov.

Fax: 703-358-2217.

Mail: Chief, Division of Migratory Bird Management, U.S. Fish and Wildlife Service, 4401 North Fairfax Drive, Mail Stop MBSP-4107, Arlington, Virginia 22203-1610.

Hand Delivery: Division of Migratory Bird Management, U.S. Fish and Wildlife Service, 4501 North Fairfax Drive, Room 4091, Arlington, Virginia 22203-1610.

Instructions: All submissions received must note that they are for consideration in development of the environmental assessment on falconry and raptor propagation activities. All comments received, including any personal information provided, will be available for public inspection at the address given above for hand delivery of comments. For detailed instructions on submitting comments and additional information on the process, see the "Public Participation" heading in the SUPPLEMENTARY INFORMATION section of this document.

FOR FURTHER INFORMATION CONTACT: Brian Millsap, Chief, Division of Migratory Bird Management, U.S. Fish and Wildlife Service, 703-358-1714, or Dr. George T. Allen, Wildlife Biologist, 703-358-1825.

SUPPLEMENTARY INFORMATION: The Fish and Wildlife Service is the Federal agency with the primary responsibility for managing migratory birds. Our authority is based on the Migratory Bird Treaty Act (MBTA) (16 U.S.C. 703 *et seq.*), which implements conventions with Great Britain (for Canada), Mexico, Japan, and the Soviet Union (Russia). Raptors (birds of prey) are afforded Federal protection by the 1972 amendment to the Convention for the Protection of Migratory Birds and Game Animals, February 7, 1936, U.S.--Mexico, as amended; the Convention between

the U.S. and Japan for the Protection of Migratory Birds in Danger of Extinction and Their Environment, September 19, 1974; and the Convention Between the U.S. of America and the Union of Soviet Socialist Republics (Russia) Concerning the Conservation of Migratory Birds and Their Environment, November 26, 1976.

The taking and possession of raptors are strictly prohibited except as permitted under regulations implementing the MBTA. Activities with migratory birds are prohibited unless specifically authorized by regulation. Regulations governing the issuance of permits for migratory birds are authorized by the MBTA and subsequent regulations. They are in title 50, Code of Federal Regulations, parts 10, 13, 21, and 22. Raptors also may be protected by State and tribal regulations.

We plan to prepare an updated environmental assessment (EA) of the activities of falconry (covered in 50 CFR 21.28 and 21.29) and raptor propagation (50 CFR 21.30). We seek suggestions for issues and alternatives to be considered in the EA.

Public Participation

You may submit written comments on topics to be considered to the location identified in the ADDRESSES section, or you may submit electronic comments to the internet address or the e-mail address listed in the ADDRESSES section. We must receive your comments before the date listed in the DATES section. Following review and consideration of comments, we will prepare a draft environmental assessment.

When submitting electronic comments, please include your name and return address in your message, identify it as comments on the falconry and raptor propagation EA, and submit your comments as an ASCII file. Do not use special characters or any encryption.

When submitting written comments, please include your name and return address in your letter and identify it as comments on the falconry and raptor propagation EA. To facilitate compiling the administrative record for this action, you must submit written comments on 8½ inch by 11 inch paper.

All comments will be available for public inspection during normal business hours at Room 4091 at the Fish and Wildlife Service, Division of Migratory Bird Management, 4501 North Fairfax Drive, Arlington, Virginia. The complete administrative record for this EA is available, by appointment, during normal business hours at the same address. You may call 703-358-1825 to make an appointment to view the record.

Our practice is to make comments, including names and home addresses of respondents, available for public review during regular business hours. An individual respondent may request that we withhold his or her home address from the record, which we will honor to the extent allowable by law. There also may be circumstances in which we would withhold from the record a respondent's identity, as allowable by law. If you wish us to withhold your name and/or address, you must state this prominently at the beginning of your comment. We will make all submissions from organizations or businesses, and from individuals identifying themselves as representatives or officials of organizations or businesses, available for public inspection in their entirety. We will not consider anonymous comments.

Dated: February 2, 2005.
Matt Hogan,
[Acting] Director, U.S. Fish and Wildlife Service.

BILLING CODE 4310-55-P

APPENDIX 2
Comments on the Notice of Intent to Prepare an Environmental Assessment

* * * * *

This is the third such Assessment since the 1976 promulgation of the original falconry regulations and the subsequent 1986 review of these regulations. I urge the Service to use its own Final Environmental Assessment - Falconry and Raptor Propagation Regulations (Sparrowe, Rollin D., July 1988), as the guide for this assessment as well. The FWS [Acting] Director's finding from that assessment was "*...the proposed changes in the raptor regulations are not a major Federal action... Accordingly, the preparation of an environmental impact statement on the proposed action is not required*" (Marler, S., 29 November, 1988). The basis for that 1988 FONSI (from the abstract) was that "*Both falconry and raptor propagation are small scale activities having little or no impact on raptor populations. Recent data indicate that most raptor populations have increased considerably from reached in the 1970's...*" (Sparrowe, 1988)

This situation has not changed in the last 17 years. FWS data indicate that the numbers of raptors taken from the wild have not grown significantly, and the number of participants in either falconry or raptor propagation is stable or growing very slowly. Justification for an EA as opposed to an EIS has not changed and I urge the Service to complete the EA.

Alternatives:
In the 1988 Assessment, the service recognizes that; "*Falconry, the sport of taking game with raptors, is a universal and centuries old tradition*". In the US, falconry has been found repeatedly to have no negative effect on game or raptor populations. Conversely, falconry provides thousands of hours of recreational opportunity for participants, helps develop a respect and appreciation for raptor resources in the general public, and fosters individual appreciation for wildlife, which has resulted in many falconers actively involving themselves as leaders in the wildlife profession.

Because falconry is beneficial for wildlife, and has been shown repeatedly as having "no negative effects;" I recommend against a proposed alternative of "no falconry".

I recommend the Service publish a preferred alternative that would include the proposed amended falconry and raptor propagation regulations (when published) after corrections, deletions, and amendments have been incorporated from the comments received during the public comment period.

Issues:
The purposes for an EA; "*...are to assess the impacts of falconry and propagation, emphasizing biological impacts on the resource, and, if needed, to propose appropriate changes in the regulations*" (Sparrowe, 1988). In the EA I recommend the Service consider those issues which have surfaced over the last 30 years of federally regulated falconry. Such issues could include:

- Relationship of falconry regulations to the development of management plans for species recently removed from the list of threatened and endangered wildlife. I do not recommend that specific management language for specific species be incorporated in the falconry regulations.
- Necessity for a duplicate-state/federal permit system. The 1988 EA reports the intent of

the Service as: *"The concept of joint Federal/state permits would be abandoned. However, states would continue to conduct falconry programs and issue state permits under Federal standards*. Nothing would prohibit them from having additional standards or requirements deemed necessary or beneficial and not more liberal than Federal standards" (Sparrowe, 1988; pg2). I strongly agree with the elimination of the duplicate permit system and am curious as to why it did not occur.

- Clarification of issues related to the use of raptors held for falconry to conservation education and commercial uses of the same birds.
- Clarification of broad federal falconry guidelines recognizing that it is impossible to write a single specific regulation for the management of raptors from such diverse locations as Alaska and Florida.
- Recognition that states now have experience with falconry and can exercise an effective direct and local roll [*sic*] in falconry regulation.

Comments from an individual

* * * * *

We submit the following comments for consideration by the U.S. Fish and Wildlife Service ("FWS" or "Service") in connection with the development of topics to be considered in the environmental assessment ("EA ") to be prepared by the Service for falconry and raptor propagation activities. As an initial matter, we wish to draw the Service's attention to the following matters, which we view with some concern:

Deviation From Prior Practice. In its approach to the current re-evaluation of the falconry and propagation regulations, the Service has deviated from the procedure used in connection with the previous (1985) re-evaluation. On that occasion, the Service first announced its intent to re-evaluate the regulations on January 4, 1985 and invited public comment. On June 24, 1986, the Service held a public meeting to determine the scope of issues to be covered and to consider an appropriate level of National Environmental Policy Act procedure to follow (Final Environmental Assessment -Falconry and Raptor Propagation Regulations, July 1988 at 1 (hereinafter, "1988 EA")). We believe the same approach should have been used for the 2005 re-evaluation.

Compressed Time Frame for Response. As compared to the 1985 re-evaluation, the time allowed for interested parties to formulate positions and communicate them to the Service has been severely compressed. We fully expect that the volume of responses received by the Service will be dramatically below those levels experienced previously, due in large part to the compressed time frame. If this is a conscious strategy to limit input on the issues at hand, we believe it is misguided.

Informal Input. Proposed revised falconry regulations were published on February 9, 2005 without the benefit of the public comment period that preceded publication of the 1986 re-evaluation, and proposed revised propagation regulations have apparently also been prepared without prior public input and are now awaiting publication. The proposed revisions to the falconry regulations are extensive and material. To the extent proposed revisions were formulated based on informal input received by Service representatives outside a public comment protocol, we suggest that the proposed revisions may not accurately represent the positions of the general falconry and raptor propagator communities. An accurate record of any informal input should be placed in the administrative record for this action. To the extent informal input was considered but is not included in the administrative record for this action, it is difficult to deem it as anything other

than the functional equivalent of considering anonymous comments.

Premature NOI. Notwithstanding the fact that the proposed propagation regulations have not yet been published, the Service has included propagation activities as a topic for the EA. It would seem either that the NOI for the EA is premature or that the Service should re-solicit propagation-related submissions once the proposed propagation regulations have been published.

Submissions for Consideration

Proposed Areas of Contention

We suggest that the following areas of contention be evaluated in the proposed EA:

1. The falconry and raptor propagation regulations *per se*;
2. The possession by falconry apprentices of captive-bred raptors;
3. The sale of captive raptors; and
4. The take of *anatum* and *tundrius* peregrines.

Suitable Range of Alternatives

We suggest the following range of alternatives:

Alternative A: No Action. Falconry and raptor propagation activities continue to be regulated as they are at present, without amendment.

Alternative B: Falconry and raptor propagation regulations are adopted as currently proposed by the Service.

Alternative C: Falconry and propagation activities continue to be regulated as at present, with the following changes: (1) A take of nestling and passage peregrines is permitted in all States; and (2) all States are required to participate in the joint Federal/State permitting system.

Alternative D: Falconry regulations are amended to require federal permits only for falconry; propagation regulations remain unchanged. The take of nestling and passage peregrines is permitted in all states.

Submissions for Consideration

We propose the following topics for evaluation in the proposed EA:

1. Whether elimination of State-issued falconry permits will ease administrative burdens on cash strapped State agencies, streamline the permit process and enable more efficient and knowledgeable management of national raptor populations?
2. Whether the fact that not all States participate in the joint Federal/State permitting system contributes to lack of uniformity in permitting and reporting activities?
3. Why do thirteen States not participate in the joint Federal/State permitting system?
4. Why do thirty-six (36) States participate in the joint Federal/State permitting system?
5. Why do some States not require a State propagation permit?
6. Whether it is still considered "untenable" to delegate all regulation of falconry" and propagation activities to the States and if so, why? *See* 1988 EA at 10.
7. Whether it would be considered untenable to vest all regulation of falconry and propagation activities in the Service and if so, why?
8. Whether elimination of Federal falconry permits and the correspondingly greater authority, costs and responsibilities to be borne by State agencies:
    a. will negatively impact raptor populations;
    b. will positively impact raptor populations;

c. will negatively impact falconry;
d. will positively impact falconry.

9. Whether an order to a State's falconers to transfer. release or euthanize their birds as a result of the suspension of their State's program pursuant to proposed 50 C.F.R. §21.29(a)(6) -(8) constitutes a taking of property without due process.
10. Whether raptorpopulations have continued to increase since the 1988 EA.
11. Perform an analysis of the impact of wild take by falconers on raptor populations with specific attention to the following questions:
    a. How many people have held valid Federal falconry permits in each year since the 1988 EA?
    b. For each year since the 1988 EA, what was the annual gross take of wild raptors for falconry and propagation?
    c. Of the annual gross take, for each year since the 1988 EA. how many (what percentage) were flighted birds and how many (what percentage) were pre-flighted birds?
    d. Of the annual gross take, for each year since the 1988 EA, how many birds were taken by beginner or apprentice falconers?
    e. Of the annual gross take, for each year since the 1988 EA. how many (what percentage) were returned to the wild, intentionally or otherwise?
    f. For each year since the 1988 EA, what was the annual net take of wild raptors for falconry and propagation?
    g. For each year that a take of eyass peregrines has been permitted, report the number taken.
12. Analyze and discuss the positive and negative effects of the sale of captive-bred birds on wild populations.
13. Analyze and discuss the positive and negative aspects of allowing apprentices to possess captive-bred birds, taking into consideration the following premises:
    a. The welfare of the bird.
    b. The fact that. of all birds in falconry, a beginner's bird stands the greatest chance of being lost, eitller through error or :from loss or change of interest.2
    c. The ability of captive-bred birds to survive an adjustment to life in the wild compared to the ability of lost, passage-caught bixds to so adjust.
    d. The threat, if any, posed to local, indigenous raptor populations by the presence of non-indigenous, captive-bred raptors released to the wild.
    e. Whether the learnings afforded a person through the process of trapping a wild bird contribute to the well-being of birds later possessed by that person and if so, how.
14. Analyze and discuss the impacts of falconry on raptor breeding populations considering the ancient falconry tradition of using only juvenile birds in falconry. Specifically, consider the following:
    a. Studies of raptor breeding habits conclude in their most conservative approaches that the mortality rate is at least 2/3 of hatched birds.
    b. Nature's intent is only to replace itself. *i.e.* the breeding pair.
15. Report current population estimates for anatum and tundrius and provide direct comparison to corresponding data in the 1988 EA.
16. Consider whether the "Similarity of Appearance" provision of the Endangered Species Act provides a rational basis for a continued prohibition on take of tundrius peregrines given

that respected field guides document numerous reliable means of distinguishing anatum and tundrius peregrines, even at a distance.

17. Evaluate the impact of a take of juvenile passage peregrines in all States, considering the conclusion of the 1988 EA that "[T]he take of raptors from the wild by falconers and propagators is small, self limiting and can be safely regarded as inconsequential to populations" (1988 EA at 24).
18. Evaluate the impact of a take of juvenile passage peregrines in all States, accompanied by a requirement that all peregrines so taken be released the following spring. In such evaluation, consider the fact that juvenile raptors suffer high mortality rates in their first winter.
19. Of flighted birds taken in any given year, does the release back, intentionally or otherwise, impact the wild raptor population, and if so, how?

Comments from two individuals

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In 1988, the Service prepared an EA covering the Falconry and Raptor Propagation Regulations as a basis for proposing changes to those regulations. Prior to performing the 1988 EA, the Service announced its intention to change the regulations, solicited comments from the public and held a public meeting to determine the scope of changes. I would hope that the Service would use the proposed EA as an opportunity to explain why these procedures were not followed as a prelude to issuing the recently proposed changes to the Federal falconry regulations. This would also be an excellent opportunity for the Service to justify their need to change the current regulations.

The following areas of contention were evaluated in the 1988 EA:

* the falconry and raptor propagation regulations, per se,
* the sale of captive-bred raptors, and
* the prohibition of tundra peregrine take.

The three areas of contention should be reevaluated in the proposed EA. The lack of any additional evidence showing that the practice of falconry has had a negative impact on wild raptor populations or has been a law enforcement problem since completion of the previous EA should support removing restrictions and requirements and essentially, making the existing regulations less stringent.

As a practice, raptor propagation has grown and matured immensely in the 17 years since the last EA. Despite this expansion, there appears to be no indication that the propagation and/or sale of raptors has negatively impacted wild populations or has caused an increase in law enforcement problems. These facts suggest that the relaxation of the current raptor propagation regulation should be considered.

Results of the 1988 EA indicated that a controlled take of passage tundra peregrine would probably have no impact on populations. Since 1988, the tundra and anatum peregrine populations have continued a broad expansion, where they have achieved all of their recovery goals and, as a consequence, were removed from the Federal list of threatened and endangered species in 1999. Since 1999, the population of peregrines has continued to increase to the point where an "uncontrolled" take of tundra peregrines for falconry would seem appropriate. Evaluation of lifting the tundra peregrine take prohibition for falconry in this EA should be performed in conjunction with the soon to be published draft EA for the passage peregrine take.

Concerning the proposed changes to the Federal falconry regulations and the anticipated proposed changes to the Federal raptor propagation regulations, the Service should consider evaluating the following areas of concern in the proposed EA:

Item No. 1

Evaluate the potential impact of the elimination of the Federal falconry permit in this EA as an area of contention. Consider the following alternatives concerning this policy change:

* Continuing the permitting for falconry under the current joint State/Federal permit system as is practiced in most States (no change),
* Requiring only a State permit to practice falconry,
* Requiring only a Federal permit to practice falconry,
* Requiring separate State and Federal permits as is practiced in some States.

The evaluation should include not only each alternative's effect on the raptor resource, but also the effect on human resource requirements for the Federal and State agencies and the permittee.

Item No. 2

Evaluate the potential impact of changing the permitting policy for the Federal raptor propagation permit in this EA as an area of contention. Consider the following alternative concerning this policy change:

* Requiring only a Federal permit to practice raptor propagation (no change).
* Requiring only a State permit to practice raptor propagation,
* Requiring both a State and Federal permit practice raptor propagation,
* Developing a joint State/Federal permit system.

The evaluation should include not only each alternative's effect on the raptor resource but also the effect on human resource requirements for the Federal and State agencies and the permittee.

Item No. 3

Evaluate the potential impact of allowing apprentices to possess captive-bred raptors in this EA as an area of contention. The following options concerning this policy change should be evaluated:

* Allowing apprentices to possess only "passage" raptors for use in falconry (no hange),
* Allowing apprentice to possess either "passage" raptors or captive-bred raptors,
* Allowing apprentices to possess only captive-bred raptors.

The evaluation of each alternative should be made to determine its potential impact on the raptor resource. Each option should also be evaluated for its overall impact on the practice of falconry and raptor propagation, including socio-economic effects.

Item No. 4

Prepare qualitative population assessments (similar to those prepared in the 1988 EA) for all populations of raptor species commonly used in falconry. Regional trends should be assessed where applicable. These assessments would be used to assist the States in managing local raptor populations and would support the Services management role under the MBTA.

Item No. 5

Examine the impact of falconry take on each species of raptor used in falconry. Specifically, analyze the falconry take data collected by the Service over the past 28 years. Determine the number of raptors taken for falconry and raptor propagation for each year broken down by species and age (eyas or passage) should be made. This data would then be used to determine the impact on the various raptor populations.

Item No. 6

In the1988 EA, the Service used a "conservative" approach in determining the net take of raptors by falconry, i.e. the Service assumed that all take represented a permanent removal from

the wild population. The Service used the conservative take determination despite stating that ample evidence exist to support the contrary. In the proposed EA, the Service should examine the "mitigating and interacting factor" effecting falconry take and determine a "net or effective" take value (either collectively or specifically) to be used in all future modeling and falconry/raptor management plans.

Evaluation of the above areas of concern in the proposed EA should result in a Finding of No Significant Impact (FONSI) for the proposed changes in the Federal falconry and raptor propagation regulations.

Comments from an individual

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Suitable Range of Alternatives

To comply with NEPA, FWS must propose a suitable range of alternatives. NAFA suggests the following alternatives for both falconry and raptor propagation activities.

Alternative A: No Action Alternative. This alternative would propose that FWS continue all falconry and raptor propagation activities as they are now conducted under federal law and regulation without change.

Alternative B: Proposed, amended falconry and raptor propagation regulations as they are published in the Federal Register, without correction or amendment. The adoption of these would be done without the benefit of comments of the public and the affected parties, falconers and raptor propagators.

Alternative C: Proposed, amended falconry and raptor propagation regulations, revised and corrected based on FWS's consideration of comments by the affected parties and others, including the present proposals to permit the take of nestling and passage peregrines. This appears to be the most reasonable because of the concerns which NAFA will express in its comments with the federal falconry regulations as proposed, and with the federal propagation regulations when they are proposed.

NAFA urges FWS not to consider an alternative which prohibits falconry and raptor propagation. Because of the long history and tradition of falconry and raptor propagation within the U.S., such an alternative is not viable, practical nor in the interest of national raptor conservation.

1988 Falconry Environmental Assessment

FWS prepared an EA and issued an FONSI on the last major revisions to the falconry regulations in 1988. That EA should be a guide and baseline for expansion of evaluation and consideration of these proposed changes to the falconry and raptor propagation regulations. For the topics evaluated in the prior EA, current information may be gleaned from present records kept by FWS and the 49 falconry states. These topics included the following: the falconry and raptor propagation regulations, per se, the sale of captive-bred raptors and the prohibition of arctic peregrine take. Each of these topics should be evaluated using the alternatives described above.

Issues to Consider

NAFA suggests that FWS consider evaluating the following topics within the EA. Each of the following issues presented below should be considered using the alternatives described above.

1. Evaluate the benefits and impacts of the proposed arrangement where falconry within the federal system will be administered by the states which now allow falconry. The evaluation should consider not only each alternative's effect on the raptor resource, but also the effect on human resource requirements for the Federal and State agencies and the permittee.

2. Evaluate the benefits and impacts of raptor propagation within a system administered by the USFWS.

3. Consider the role of falconers and falconry birds used in conservation education in comparison to the birds used primarily for commercial purposes, i.e. special purpose permits.

4. Evaluate the expansion of raptor propagation and its impact on the take of wild raptors as an alternative source of birds.

5. Assess the value of falconry and raptor propagation birds held as a repository for any birds which may become threatened or endangered in the future. In this context, evaluate the use of a broader range of species of raptors as contemplated in the proposed falconry regulations.

6. Consider the greater role of golden eagles in falconry in the proposed regulations as compared to the present regulations, 50 CFR 21.28-29, 50 CFR 21.30 and 50 CFR 22.24.

7. Analyze the use of an adaptive management system for raptors recently removed from the list of threatened and endangered species, including both eyass and passage peregrines for falconry purposes. As a corollary, consider the use of any species designated as a so-called "sensitive species" by any federal agency. This evaluation should include the flexibility of adaptive management over the use of fixed numbers and percentages presented in the proposed falconry regulations to avoid the need for formal regulatory amendment to make changes for harvest purposes.

8. Consider the benefits of the role of the falconer/propagator as a conservationist. For example, many falconers have contributed greatly to conservation by becoming leading raptor biologists in government (FWS, other federal agencies, state agencies), school teachers and university professors, veterinarians, medical researchers, raptor rehabilitators, field researchers for private consulting firms, and as leaders of the most significant raptor research and conservation biology organizations.

9. Compare and contrast falconry schools as a substitute for the mentorship program within the falconry regulations.

10. Consider and evaluate the use of captive-bred raptors and passage Harris's hawks by apprentice falconers as a significant change from the current regulations. Each alternative should be evaluated to determine its effect on the raptor resource and its overall impact on the practice of falconry and raptor propagation, including socio-economic effect.

11. The Service has used a "conservative" approach in determining the net take of raptors by falconry, i.e. the Service assumes that all take represents a permanent removal from the population. Evaluate the "mitigating and interacting factors" affecting the take of raptors for falconry and determine the "net" take value (collectively and specifically) to be used in future modeling and falconry/raptor management plans.

The 1988 EA and FONSI concluded that falconry had no adverse impact on the environment and raptors taken for falconry purposes. Given that there are about the same number of falconers in the U.S. and approximately the same number of raptors are taken from the wild annually, NAFA assumes that when falconry and raptor propagation are reasonably evaluated in the new EA, FWS will arrive at the same, inevitable conclusion that falconry and raptor propagation have no adverse impact on the environment. With such a conclusion, preparation of an EIS becomes unnecessary. In fact, NAFA believes that FWS will find that falconers, falconry and raptor propagation provide significant benefits to the environment by their support of raptor conservation, education, and recovery programs.

Comments from an organization

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The Arizona Game and Fish Department recommends while preparing the EA you consider what the proposed changes would have on raptor populations. We feel it is important to consider 1) Mortality on non-target species, 2) Season of take (extension or retraction), 3) Increase or decrease of take on a species (increasing or decreasing the ability of the falconry community for take; and 4) Release of birds into the wild (hybridization and disease).

Comments from a state agency

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Recently proposed changes to reduce federal regulation of falconry and raptor propagation will place more responsibilityon state governments to protect and manage their raptor populations and will influence the scope of the EA.

The EA should address that populations of some species may be of concern at the state level, though though they have no special status at the federal level. An example is the northern goshawk, which is not listed at the federal level but is being considered for inclusion on Minnesota's list of species of special concern and is on Audubon's WatchList. Minnesota is currently conducting studies on the northern goshawk to help manage this species.

The EA should also address the scarcity of active, natural nest sites for peregrine falcons. While peregrine falcons have been reestablished in Minnesota, most of the nesting birds are on artificial structures. Delisting of the peregrine creates the potential for falconry take in the central and eastern U.S., as has been done in the West. This potential take could create disturbance issues at the few natural nest sites that currently exist.

If federal oversight of falconry is reduced, it could reduce consistency in regulations between states and increase opportunities for illicit capture and interstate trade in raptors. The EA should consider the potential impacts of this including the movement of genetically different animals from one region to another.

Comments from a state agency

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The Environmental Assessment should properly assess the direct and indirect effects this proposal will have on wild populations.

Comment from a state agency

APPENDIX 3
North American Landbird Conservation Plan[1] Accuracy and Precision Ratings

Accuracy Ratings

ACCURATE
Most individuals counted, or accurate estimates available from thorough searches or color-marking most of species' population. This applied only for a few endangered species and to a few possibly extinct species.

GOOD
Estimates based on species-specific surveys of appropriate design throughout a species' range.

MODERATE
Good coverage by Breeding Bird Surveys across most of the species' breeding range, and BBS methods area appropriate for the species, or there were species-specific estimates that used appropriate data representative of the species' range. These estimates are likely to be well within the correct order of magnitude, often within 50% of true number.

FAIR
Data available to calculate an estimate, but one or a few limitations increase uncertainty such as low sample size, a small portion of a species' range sampled, inappropriate sampling methods/bias, and high variance in counts. These estimates are expected to be in the correct order of magnitude.

POOR
Data were available to calculate an estimate, but there were multiple limitations on the estimate, such as low sample size, a small portion of a species' range sampled, inappropriate sampling methods/bias, and high variance in counts. These estimates are expected to be in the correct order of magnitude most of the time.

GUESSTIMATE
Order of magnitude judgments were made by the PIF Science Committee because few data were available on relative abundance. These estimates may not be in the correct order of magnitude.

Overall, about two-thirds of the population estimates presented in the Landbird Management Plan were rated as having fair to moderate accuracy, and were expected to be within and usually well within an order of magnitude of the correct breeding population. A substantial number of population estimates are simple guesstimates - most were species that have a very small fraction of their global population within the U.S.

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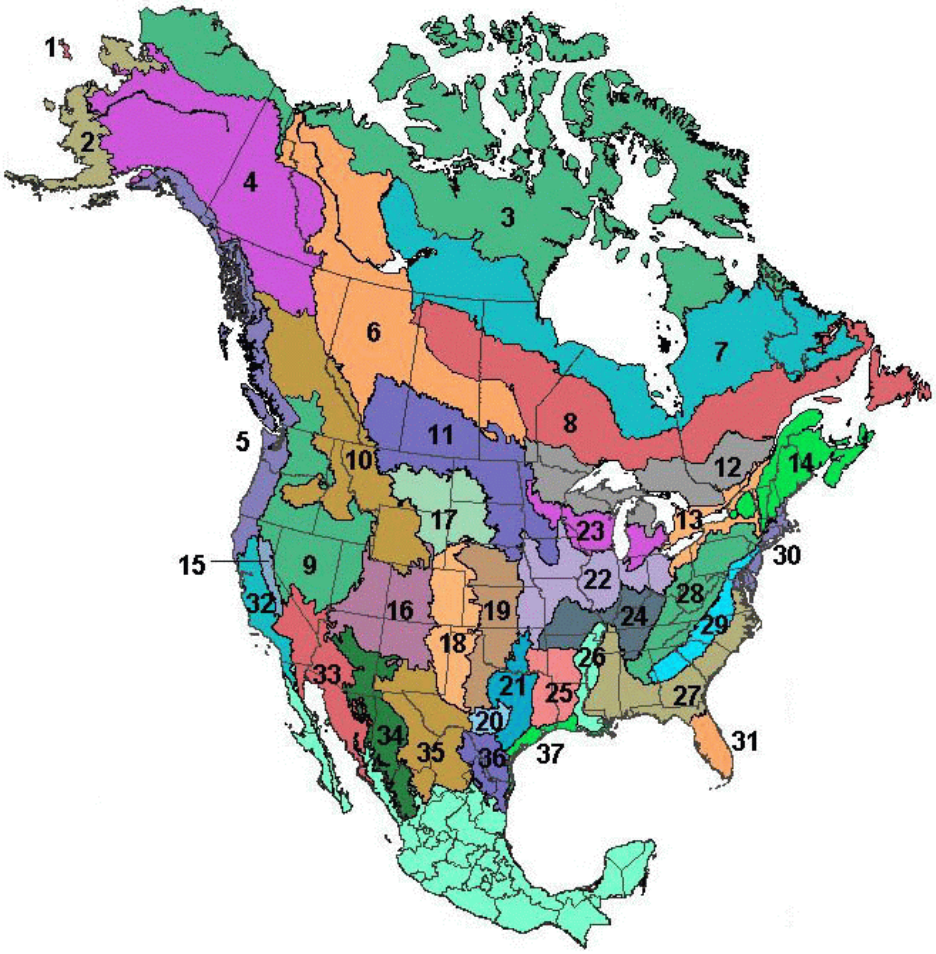
[1] Rich, T. D., C. J. Beardmore, H. Berlanga, P. J. Blancher, M. S. W. Bradstreet, G. S. Butcher, D. W. Demarest, E. H. Dunn, W. C. Hunter, E. E. Iñigo-Elias, J. A. Kennedy, A. M. Martell, A. O. Panjabi, D. N. Pashley, K. V. Rosenberg, C. M. Rustay, J. S. Wendt, and T. C. Will. 2004. Partners *in* Flight North American Landbird Conservation Plan. Cornell Laboratory of Ornithology, Ithaca, New York.

PRECISION/REPEATABILITY OF POPULATION ESTIMATES

Precision Category	95% Confidence Limits on Estimates, based on variance in BBS counts
Very High	within 5% of the mean
High	within 10% of the mean
Good	within 20% of the mean
Moderate	within 50% of the mean
Low	within 80% of the mean
Very Low	outside 80% of the mean

APPENDIX 4
North American Bird Conservation Initiative Bird Conservation Regions



REGION NAMES

1. Aleutian/Bering Sea Islands
2. Western Alaska
3. Arctic Plains and Mountains
4. Northwestern Interior Forest
5. Northern Pacific Rainforest
6. Boreal Taiga Plains
7. Taiga Shield and Hudson Plains
8. Boreal Softwood Shield
9. Great Basin
10. Northern Rockies
11. Prairie Potholes
12. Boreal Hardwood Transition
13. Lower Great Lakes/St. Lawrence Plain
14. Atlantic Northern Forest
15. Sierra Nevada
16. Southern Rockies/Colorado Plateau
17. Badlands and Prairies
18. Shortgrass Prairie
19. Central Mixed-grass Prairie
20. Edwards Plateau
21. Oaks and Prairies
22. Eastern Tallgrass Prairie
23. Prairie Hardwood Transition
24. Central Hardwoods
25. West Gulf Coastal Plain/Ouachitas
26. Mississippi Alluvial Valley
27. Southeastern Coastal Plain
28. Appalachian Mountains

29. Piedmont
30. New England/Mid-Atlantic Coast
31. Peninsular Florida
32. Coastal California
33. Sonoran and Mohave Deserts
34. Sierra Madre Occidental
35. Chihuahuan Desert
36. Tamaulipan Brushlands
37. Gulf Coastal Prairie
38. Islas Marías
39. Sierras de Baja California
40. Desierto de Baja California
41. Islas del Golfo de California
42. Sierra y Planicies de El Cabo
43. Planicie Costera, Lomeríos y Cañones de Occidente
44. Marismas Nacionales
45. Planicie Costera y Lomeríos del Pacífico Sur
46. Sur del Altiplano Mexicano
47. Eje Neovolcßnico Transversal
48. Sierra Madre Oriental
49. Planicie Costera y Lomeríos Secos del Golfo de México
50. Cuenca del Río Balsas
51. Valle de Tehuacán-Cuicatlán
52. Planicie Costera y Lomeríos H·medos del Golfo de México
53. Sierra Madre del Sur
54. Sierra Norte de Puebla-Oaxaca
55. Planicie Noroccidental de Yucatán
56. Planicie de la Península de Yucatán
57. Isla Cozumel
58. Altos de Chiapas
59. Depresiones Intermontanas
60. Sierra Madre de Chiapas
61. Planicie Costera del Soconusco
62. Archipiélago de Revillagigedo
63. Isla Guadalupe
64. Arrecife Alacranes
65. Los Tuxtlas
66. Pantanos de Centla-Laguna de Términos
67. Hawaii

DIVISION OF MIGRATORY BIRD MANAGEMENT