



U.S. Fish and Wildlife Service

Draft

Environmental Assessment

Take of Peregrine Falcons from the Wild for Use in Falconry

Prepared by
U.S. Fish and Wildlife Service
Migratory Birds and Habitat Program

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Abbreviations

BBL	Bird Banding Lab
BBS	Breeding Bird Survey
CFR	Code of Federal Regulations
EA	environmental assessment
FR	Federal Register
HPAI	Highly Pathogenic Avian Influenza
IPM	integrated population model
km	kilometer
MBTA	Migratory Bird Treaty Act
NEPA	National Environmental Policy Act
NMP	Northern Management Population
PEFA	peregrine falcon
PTL	prescribed take level
SMP	Southern Management Population
U.S.C.	United States Code
USFWS	U.S. Fish and Wildlife Service

1.0 Introduction

1.1 Background

Three subspecies of peregrine falcons (*Falco peregrinus*) are recognized in North America: *F. p. pealei*, the maritime, or Peale’s peregrine; *F. p. tundrius*, the Arctic peregrine; and *F. p. anatum*, the American peregrine (White et al. 2020). Take of wild peregrine falcons for falconry was suspended in the early 1970s when two subspecies (*F. p. anatum* and *F. p. tundrius*) were listed under the Endangered Species Act due to precipitous population declines (Title 50 of the Code of Federal Regulations [CFR] Part 17.11). The population declines were largely attributed to contamination by chlorinated hydrocarbon pesticides such as dichlorodiphenyltrichloroethane (DDT) and other related pesticides that reduced reproductive success (Nisbet 1988). The use of these pesticides was severely restricted in the U.S. and Canada in 1972 and populations of the two subspecies began to recover (Kiff 1988). Consequently, *F. p. tundrius* was removed from the U.S. endangered and threatened list in 1994 (USFWS 1994) and *F. p. anatum* was removed from the list in 1999 (USFWS 1999). Subsequently, the Committee on the Status of Endangered Wildlife in Canada designated both subspecies as “not at risk” in Canada in 2017 (COISEWIC 2017).

Following de-listing from the endangered species list in the U.S., falconers requested that the Service allow take for falconry to resume in the U.S. Resumption of take was complicated at that time, because the two subspecies were still listed under the Species at Risk Act in Canada and on some state threatened and endangered species lists (i.e., the falconry management strategy under the Service’s falconry regulations were not appropriate for the species at that time). After a detailed status review and negotiations among the U.S. Fish and Wildlife Service, Canada, and states, the Service derived a management strategy that allowed for limited falconry take throughout the U.S. published in 2008 as an Environmental Assessment (USFWS 2008, hereafter “2008 EA”). The Service’s goal was to allow take for falconry while not reversing the recovery of peregrines throughout the U.S. and Canada. The Service considered three management populations at that time: (1) northern, which consisted of *F. p. tundrius* and *F. p. anatum* that originated north of 54° latitude; (2) eastern, which consisted of *F. p. spp* that originated south of 54° latitude and east of 100° longitude; and (3) western, which consisted of *P. f. anatum* that originated south of 54° latitude and west of 100° longitude and *P. f. pealei*.

The initial management strategy allowed for up to: (1) 116 first year (Y1) peregrines to be taken through 31 August west of 100° W longitude in the coterminous U.S. and Alaska; and (2) 36 Y1 peregrine falcons to be taken east of 100° W longitude in the coterminous U.S. between 20 September and 20 October. The definition of Y1 birds includes nestlings, fledglings, migrating, and wintering peregrines any time within their first year after hatching and the following breeding season. This management strategy was designed to reduce take of *F. p. anatum* originating in Canada and in the eastern U.S. because they were still listed as at risk or of concern in Canada and in many eastern U.S. states at that time. The Service committed to periodically review the status of peregrine falcons and consider reducing restrictions when *F. p.*

anatum was no longer considered at risk in Canada and the eastern population of *F. p. anatum* in the U.S. no longer required special protection.

The Service's estimate of Y1 peregrines for the northern population at the time of the 2008 EA was a minimum of 3,989 and maximum of 13,397. Franke (2016) conducted a more detailed analysis of production from the northern population and estimated a population size of approximately 21,000 Y1 birds in the northern population in 2000. In addition, a hydrogen stable isotope study confirmed that most (~75%) of the falcons taken under the current management policy between September 20 and October 20 in the eastern U.S. were from the northern population. In response to a request to update allowable take based on this information by the Central, Mississippi, and Atlantic Flyways, the Service increased allowable take from 36 to 144 east of 100° W longitude in the coterminous U.S. (USFWS 2017). The allowable take was derived using the 10th quantile of Franke's (2016) population size estimate so that the maximum take would be well within biologically acceptable levels.

Since 2016, the Service has received multiple requests from stakeholders including the four Flyway Councils, States, and falconers that the Service consider further adjustments to peregrine falcon take, including:

- (1) extending take periods in the western U.S.;
- (2) increasing take limits in the western U.S. to reflect information on current population size; and
- (3) "normalizing" take of peregrine falcons throughout the U.S., where normalizing is managing take of a species with a national upper take limit without further geographic or temporal restrictions.

Current normalized federal framework allows states to set state regulations to allow take of a species by falconers at any time of the year, subject to a population-wide take limit equal to 5% of estimated annual production. State regulations can be more restrictive but not more liberal than the federal framework. States are expected to coordinate take through the Flyway Councils to ensure compliance with the take limits at the scale of the management population (USFWS 2007, 2008). Take of most other raptors under the Service's current falconry regulations is normalized. This normalization process could be applied to peregrine falcons, as it was prior to the take limits set in the 2008 EA.

The 2008 EA established the current harvest policy for peregrine falcons. To implement any of the requested changes (1-3 above) require revisions to the 2008 EA. The first step in that process is to assess the status of peregrine falcons in North America (including Greenland) so that any new harvest alternatives can be scientifically evaluated relative to their anticipated effects on peregrine falcon populations. This assessment was completed by the Service in collaboration with representatives from the Flyway non-game technical sections (USFWS 2023).

The proposal in this EA, if finalized, would replace the 2008 EA for take of peregrine falcons for falconry purposes. This EA presents a preferred action and four alternatives. We evaluate the

effects of the preferred action and two alternatives considered for implementing take of Y1 peregrine falcons. Two alternatives were considered, but not evaluated.

1.2 Management Objective

We consider the effects of a harvest of nestling and post-fledging first-year peregrine falcons from the wild for use in falconry. Specifically, we evaluate estimated impacts to biologically- and geographically-defined peregrine falcon populations that would result from a harvest of first-year (Y1) peregrines in different geographic regions of the U.S. The harvest would be by State- or Territory-licensed falconers, who operate under federal falconry regulations at Title 50 of the Code of Federal Regulations (50 CFR 21.82). We use the terms “take limit” and “take rate” to define harvest throughout this EA. We define “take rate” as the proportion or percentage of the number of Y1 peregrines removed by falconers each year. We define “take limit” as the number of Y1 peregrine falcons that falconers could potentially harvest at the maximum allowable take rate.

The Service’s goal is to maintain peregrine falcon populations while providing falconry opportunities, consistent with the current falconry regulations. More specifically, the Service’s explicit management objective is to allow take of up to the lesser of either (1) 50% maximum sustained yield (MSY), or (2) up to 5% of Y1 peregrines in the Northern (NMP) and Southern (SMP) management population (see the Biogeography and Distribution section for population descriptions). These take rates of Y1 peregrines are expected to account for approximately 1% of the total population (Millsap and Allen 2006). The Service established these restrictive management options to be conservative with respect to falconry take given the inability to closely monitor population size and demographic rates of peregrine falcons across their range. The take assessment conducted by the Service and states (USFWS 2023) indicated that 5% of production was less than the estimated take rate at 50% of MSY (MSY = 11% over all age classes; see Take Assessment section below for more details), so the Service’s objective for this EA is a take rate of 5% of Y1 birds. Because the MSY take rate included adults, the objective of 5% of Y1 birds adds additional conservatism to the objective because population growth is more sensitive to adults than Y1 birds (USFWS 2023). The number of peregrines currently taken for falconry from the wild is approximately half of allowable levels under current regulations (Table 1). Thus, based on the assessment by the USFWS (2023) and relatively low number of permits requested under current regulations, any increases in allowable take up to 5% of Y1 peregrines are consistent with permitting for falconry demand at biologically acceptable levels. An additional management consideration is also to achieve relative sexual parity in take (a sex ratio no greater than 60:40 in either direction, as measured against the take limit), and a geographic distribution in take proportional to relative population size.

Table 1. Peregrine falcon allowable take (under current federal and state regulations and policy) and realized take for 2018–2020 as reported by state fish and wildlife agencies (USFWS 2023).

Flyway	Age class	State	Year					
			2018		2019		2020	
			Allocated	Taken	Allocated	Taken	Allocated	Taken
Pacific	Nestling	AK	41	2	41	0	41	2
		AZ	7	2	7	3	7	3
		CA	0	0	0	0	0	0
		CO	4	2	4	0	4	0
		ID	2	0	2	1	2	2
		MT	6	3	5	0	6	1
		NV	0	0	0	0	0	0
		NM	4	4	4	2	4	2
		OR	13	0	10	1	10	2
		UT	17	13	17	12	17	14
		WA	12	5	12	8	12	9
		WY	5	2	5	0	NA	NA
Pacific	Total (- AK)		70	31	66	27	62	30
Pacific	Total (+ AK)		111	33	107	27	103	35
Central	Passage	TX	30	20	30	20	30	17
		OK	8	2	6	2	6	2
		KS	10	2	6	2	6	2
		NE	0	0	6	0	6	0
Central	Total		48	24	48	24	48	21
Mississippi	Passage	AL	4	0	1	0	1	1
		AR	5	1	6	3	6	2
		IA	5	0	5	0	5	0
		IL	5	1	2	1	2	1
		IN	5	0	6	0	3	1
		KY	0	0	0	0	1	0
		LA	0	0	1	1	1	0
		MI	5	1	5	1	4	1
		MN	5	0	5	3	5	1
		MO	0	0	0	0	0	0
		MS	4	2	6	2	8	6
		OH	0	0	0	0	0	0
		TN	5	2	5	0	3	0
		WI	6	5	6	4	9	2
Mississippi	Total		48	12	48	15	48	15

			Year					
			2018		2019		2020	
Atlantic	Passage	ME	5	0	5	3	2	2
		MA	0	0	0	0	0	0
		RI	0	0	0	0	0	0
		PA	5	0	5	1	4	0
		NJ	6	3	5	1	5	3
		MD	6	4	6	6	8	8
		WV	0	0	0	0	1	0
		VA	5	5	5	3	7	3
		NC	5	5	6	2	6	1
		SC	5	1	5	0	2	0
		GA	5	2	5	1	5	2
		FL	6	3	6	2	8	4
Atlantic	Total		48	23	48	19	48	23

2.0 Purpose and Need

2.1 Purpose and Need for Federal Action

The Service's purpose in considering the Proposed Action is to review peregrine falcon population and take limits based on the best available science and information and to revise the peregrine management strategy in the U.S. based on changes in the species' biological and legal status. We must ensure authorized take is consistent with the four bilateral international conventions to conserve migratory birds, the MBTA, and its implementing regulations, including falconry regulations (50 CFR 21.82). Possession of a raptor on the List of Migratory Birds (50 CFR 10.13) for falconry or propagation purposes is authorized only by the federal regulations at 50 CFR 21.82 and 21.85. The 2008 EA set take limits of peregrine falcons for falconry. In that 2008 EA, the Service committed to reviewing the management strategy if the population status changed throughout the range, including Canada. Updated population status information for the northern population of peregrine falcon (Franke 2016, Franke et al. 2016) led to requests from stakeholders, including the four Flyway Councils, States, and falconers for increased opportunity for take. The Service increased the take limit east of 100° longitude and an updated status and take assessment for peregrines throughout the U.S. and Canada (USFWS 2023).

The need for this action is to reduce the management constraints that were introduced in the 2008 EA and are currently in place for peregrine falcons. When species take is not normalized, additional management is resource and time intensive, especially when the best available science indicates that the species may not need special protection above what it is afforded under current falconry regulations. The most recent peregrine falcon assessment (USFWS 2023) indicates that any increases in allowable take up to 5% (i.e., normalization) of Y1 peregrines are consistent with permitting for falconry demand at biologically acceptable levels. Reducing these

management constraints will also remove additional administrative burden on state and federal agencies.

2.2 Authority and Responsibility

This Environmental Assessment (EA) has been prepared to analyze the environmental consequences of the U.S. Fish and Wildlife Service (Service) proposal to revise the peregrine falcon management policy on falconry take in the U.S., pursuant to the National Environmental Policy Act (NEPA) (42 U.S. Code [U.S.C.] Sections [§§] 4321–4347). The Migratory Bird Treaty Act (MBTA) (16 U.S.C. Sections 703-712) implements the four international conservation treaties that the U.S. entered into with Canada, Mexico, Japan, and Russia. It is intended to ensure the sustainability of populations of all protected migratory bird species. The MBTA prohibits any person from taking, possessing, purchasing, bartering, selling, or offering to purchase, barter, or sell, among other things, raptors (birds of prey) unless the activities are allowed by Federal permit issuance under the falconry regulations at Title 50 of the Code of Federal Regulations (50 CFR 21.82).

2.3 Scoping and Public Participation

The Service coordinated with the four Flyway Council’s nongame technical committees to develop the updated status report (USFWS 2023) and to scope the considerations in this EA. Each Flyway has a Council, consisting of representatives from each state, provincial, and territorial agency within that Flyway. The Councils are advised by Flyway technical committees consisting of biological staff from their member agencies. The technical committees evaluate population and habitat information and make recommendations to the Councils on the matters of migratory bird conservation. Each Flyway has a Service Representative who work with the Flyway Council and the technical committees to share information and develop management recommendations.

3.0 Proposed Action and Alternatives Considered

3.1 Proposed Action – Preferred Alternative

Under the proposed action, the Service would normalize peregrine falcon take, managing take of a species with a national upper take limit without further geographic or temporal restrictions. Based on the updated status and take assessment, the Service would set an upper limit of falconry take of 158 Y1 peregrines from the SMP and 1,324 Y1 peregrines from the NMP. States would be allowed to allocate take within the flyways and set seasonal limits to target a particular population. The flyways could limit the total allowable take to be less than the maximum allowable take established by the Service.

3.2 Alternative 1 – No Action

Under the No Action alternative, the Service would retain the current management approach with a seasonal constraint of take limited to Y1 peregrines prior to September 1 west of 100° W longitude, and between September 20th and October 20th east of 100° W longitude. Take limits would remain at 116 Y1 peregrines west of 100° W longitude and 144 Y1 peregrines east of 100° W longitude.

3.3 Alternative 2

Extend the falconry take season through the end of October throughout the U.S. but maintain current take limits of 116 Y1 peregrines and 144 Y1 peregrines for areas west and east of 100° W longitude, respectively.

3.4 Alternatives Considered, but not Evaluated

3.4.1 Alternative 3

Five-year stepwise process that would liberalize the annual take of NMP PEFA to levels under normalization (up to 1,325 first-year peregrines) within the current seasonal constraints east of 100° W longitude and allow a fall take season to the end of October within the Pacific Flyway.

3.4.2 Alternative 4

Extend the fall falconry take season annually across the entire U.S. over five years to liberalize annual take from the SMP to levels consistent with normalization (up to 158 first-year birds).

4.0 Affected Environment

4.1 Biogeography and Distribution

Although *F. p. tundrius* is considered taxonomically distinct from *F. p. anatum* at the subspecies level, recent genetic work suggests little differentiation between these forms (Brown et al. 2007). In the interior of Alaska and northern Canada these subspecies may intergrade such that they overlap considerably in plumage and morphology, and both are strongly migratory, in contrast to *F. p. pealei* and *F. p. anatum* in temperate North America (White and Boyce 1987, Taubert et al. 1999). Because of genetic and phenotypic similarity and similar migratory behaviors, it is difficult to separate high-latitude *F. p. anatum* from *F. p. tundrius* outside their respective breeding areas.

Peregrines breeding south of 54° N latitude (i.e., the SMP) are less migratory than peregrines breeding further north (i.e., the NMP), and many individuals overwinter within their breeding range (Taubert et al. 1999, USFWS 2008). Previously, management of take separated the SMP into eastern and western subpopulations at 100° W longitude because peregrines in the eastern parts of this range were perceived to have recovered more slowly than those in the west (Millsap et al. 1998), and the Service wanted the flexibility to manage these subpopulations differently

(USFWS 2008). Based on the updated population status of peregrines (USFWS 2023) the Service no longer considers it necessary to differentiate eastern and western components of the SMP, and so we consider only two management populations: (1) the NMP, consisting of *F. p. anatum* and *F. p. tundrius* subspecies originating at natal sites at or north of 54° N latitude; and (2) the SMP, that consolidate the eastern and western populations from the previous EA and consists of all peregrine falcons originating from natal sites south of 54° N latitude and *F. p. pealei*. The relationship between taxonomic and management populations is illustrated in the 2008 EA (USFWS 2008; Figure 1).

4.2 Population Status and Size

The USFWS (2023), in collaboration with the Flyway council's nongame technical committees and New Mexico State University, recently completed a population status and take assessment for peregrine falcons. They developed population-specific integrated population models (IPMs) that incorporated banding data from the Bird Banding Lab (BBL), productivity data from states and NGOs, and time series of indexes to population size (BBS for the SMP, and migration counts for the NMP). The IPMs included three submodels: (1) a survival submodel based on the BBL band and dead recovery data; (2) a productivity (defined as the number of young fledged per occupied nest) model that was informed by observations of the number of young fledged and number of occupied territories at various study sites throughout the range of both management populations; and (3) a state-space time series model that included annual BBS indices and migration counts with estimates of uncertainty. Integrating these submodels and their supporting data into the IPM allowed them to derive statistically robust estimates of annual population trends. Thus, the IPM provided insight into population status as measured by specific demographic parameters and overall population trends. In addition, the IPM provided a mechanism to update changes in population size since the previous EA. They used population size of breeding pairs estimated from state surveys in 2008 (USFWS 2008) for the SMP, and a Lincoln-Petersen estimate of total juveniles in 2000 for the NMP (Franke et al. 2016) as starting population sizes. The population-specific annual trend estimates from the IPM were then used to project the overall population size annually to the most recent years for which they had time series data (2020 for the NMP and 2019 for the SMP).

In addition to the IPMs being population specific, additional complexities were included. The USFWS (2023) assumed that peregrines did not breed until the third breeding season after they fledged. The IPMs included three age classes: Y1; second-year (Y2; first breeding season after fledging to the second breeding season after fledging); and after second-year (AY2). Y2 birds had to survive their first year as an AY2 before their first breeding attempt. The USFWS (2023) found that a survival submodel that assumed rates were the same for Y2 and AY2 (i.e., AY1) fit the band-recovery data best. The survival submodel also included seasonal survival rates, which allowed them to take advantage of peak banding effort during the spring and fall migration periods. The summer survival period for AY1 in the NMP spanned 1 May to 1 October (5-month period) whereas Y1 summer survival extended from 1 Aug (mid-point of peak effort for banding fledglings) – 1 October. The winter survival period extended from 1 October to the following 1 May (7-month period) for both age classes in the NMP. For the SMP, the AY1 summer survival

was mid-May through 1 October (4.5 months) and Y1 summer survival was from mid-June through 1 October (3.5 months). The winter survival period for both age classes in the SMP was from 1 October to mid-May of the following year (7.5 months). An additional complexity in the analysis by the USFWS (2023) was that the time frame of the various data sources varied. The number of bands that were recovered from dead peregrines were sparse, so they used BBL data beginning in 1980 for both management populations. Productivity data were available beginning in 2008 for both populations. The time series indices varied from 2000-2020 for the NMP and 2008-2019 for the SMP. The submodels were analyzed using these various years, but then aligned appropriately by year when integrated in the state-space model.

The analysis suggested the survival rates for Y1 and AY1 for both populations were constant, whereas recovery rates appeared to be increasing for peregrine falcons in the SMP. Mean annual survival estimates (Table 2) for Y1 peregrines in the NMP were a little higher than those in the SMP, whereas annual survival was slightly higher for AY1 birds in the SMP than birds in the NMP. Productivity was significantly higher in the SMP (1.73; 95% CI = 1.69–1.77) compared to the NMP (1.37; 95% CI = 1.26–1.51). We estimated an average annual growth rate (λ) using the mean seasonal survival (Table 2) and productivity rates above using the same 3-stage population matrix derived by the USFWS (2023). Estimated λ given these rates was 1.03 for the NMP and 1.05 for the SMP. The migration counts increased from 1,971 in 2000 to a high of 3,353 in 2017 ($\lambda = 1.03$) before declining to 2,103 in 2020, which indicated a stable population from 2000 to 2020 ($\lambda = 1.003$). The BBS indices increased from 0.016 birds per route in 2008 to 0.024 in 2019, which equaled a λ of 1.04. The estimated λ derived from integrating all data streams together was 1.016 (95% CI = 1.007–1.025) for the NMP and 1.043 (95% CI = 1.017–1.082). Therefore, the demographic data, time series and integrated models all show similar patterns with a stable or slightly increasing population in the NMP and a more rapidly increasing population in the SMP.

Expanding the population size estimates of juveniles from the NMP from 2000 using the annual estimates of λ from the IPM resulted in an estimated mean population size of 94,366 (95% CI = 69,991–122,299) for that population in 2020. The USFWS (2023) estimated that approximately 28% (N = 26,875; 95% CI = 15,776–40,339) of the total were Y1 birds that could be exposed to falconry take. The estimated population size for the SMP in 2019 was approximately 9,583 (95% CI = 7,532–12,027) with an estimated 3,193 (2,335–4,251) Y1 individuals that could be exposed to falconry take.

Table 2. Mean survival, standard deviation (SD), 95% credible intervals (CRI), and median survival by age class (Y1 = first year; AY1 = after first year) and season for peregrine falcons in the southern (SMP) and northern (NMP) management population estimated from the integrated population models (USFWS 2023). Concentration is a measure of CV for binomial variables (Link and Barker 2009) where smaller values represent more precise estimates.

Management population	Age	Season	Mean	SD	2.5 th CRI	Median	97.5 th CRI	Concentration
SMP	Y1	Winter	0.655	0.012	0.632	0.655	0.679	0.025
		Summer	0.716	0.010	0.697	0.716	0.735	0.022
		Annual ¹	0.438	0.011	0.417	0.438	0.460	0.022
	AY1	Winter	0.890	0.005	0.880	0.890	0.900	0.016
		Summer	0.906	0.004	0.898	0.906	0.915	0.014
		Annual	0.807	0.006	0.795	0.807	0.819	0.015
NMP	Y1	Winter	0.607	0.025	0.557	0.607	0.656	0.051
		Summer	0.993	0.007	0.975	0.995	1.000	0.084
		Annual ¹	0.509	0.029	0.454	0.509	0.566	0.058
	AY1	Winter	0.855	0.010	0.836	0.855	0.874	0.028
		Summer	0.918	0.008	0.902	0.918	0.933	0.029
		Annual	0.785	0.010	0.765	0.784	0.805	0.024

¹Extracted out to cover a full 12-month period to make direct comparisons among age classes and populations since the annual cycle was <12 months for Y1.

4.3 Migration Biology

Migration spatial and temporal patterns are important to managing peregrine take because they can help managers target specific populations (Taubert et al. 1999). Therefore, the USFWS (2008) assessed first-year migration patterns of Y1 peregrines using banding and recovery data from the Bird Banding Laboratory (BBL). We updated some of these banding assessments with data through 2023. We filtered the banding data to include: (1) Juvenile and Local (BBL “Age” code 3 and 4); (2) birds recovered or recaptured within 365 days of banding; (3) birds recovered between 1 Sept and 31 March; and (4) birds with known latitude and longitude of recovery. In addition, we filtered out birds that were observed or found dead in the nest (BBL “How Obtained” codes 30 and 33), reports of skeleton only (BBL “How Obtained” codes 50; assuming birds should not have been skeletal within such a short time of banding), birds recovered out at sea or with unknown region code (BBL “Encounter Region” code 0, 94, 96), and birds with unknown recovery months. After filtering, the data set consisted of 202 migrating and winter encounters from the NMP, and 1,627 from the SMP (1,446 from east of 100° W and 181 from west of 100° W).

We calculated cumulative distribution functions (CDFs) of recovery latitudes and longitudes to quantify spatial distributions of migrating peregrine falcons for each population (USFWS 2008). Note that for this part of our assessment, we retain the distinction between the eastern and western parts of the SMP. The CDF plots of winter reencounters by latitude suggest that about 65% of Northern peregrines migrate to locations south of 31° N latitude, whereas approximately

90% of Eastern and ~78% of Western peregrines winter north of 31° (Figure 1). The CDF plots of longitude winter reencounters indicate that most of the Eastern (~95%) and Northern (~80%) peregrines occur east of 100° W longitude, whereas most (~83%) of Western peregrines remain west of 100° W longitude (Figure 2). Combining the East and West peregrines into the South population indicated similar proportions wintering north of 31° as for the East given that the East and West had similar latitudinal migration patterns and the East had such a larger sample size. Although peregrines in the West had different longitudinal patterns than the East, combining them into the South population was not meaningful because the number of bands from the East greatly outnumbered those from the West.

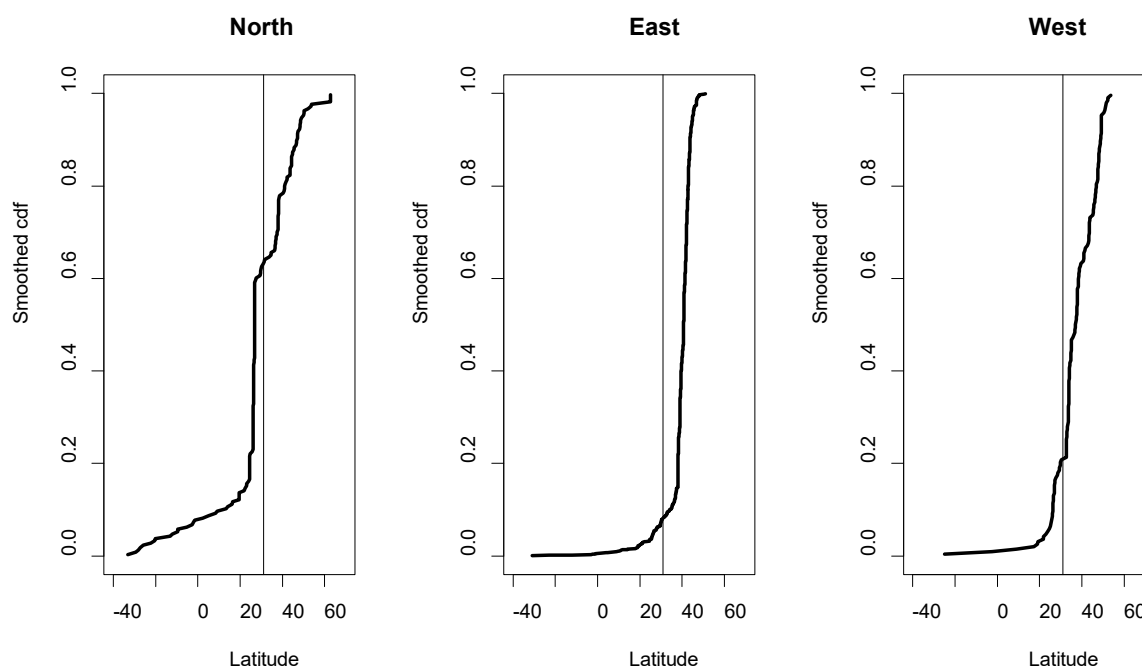


Figure 1. Cumulative distribution functions for reencounter latitudes of first-year peregrine falcons banded just prior to fledging from three management populations. The vertical lines represent longitudes relevant to management (31° N latitude).

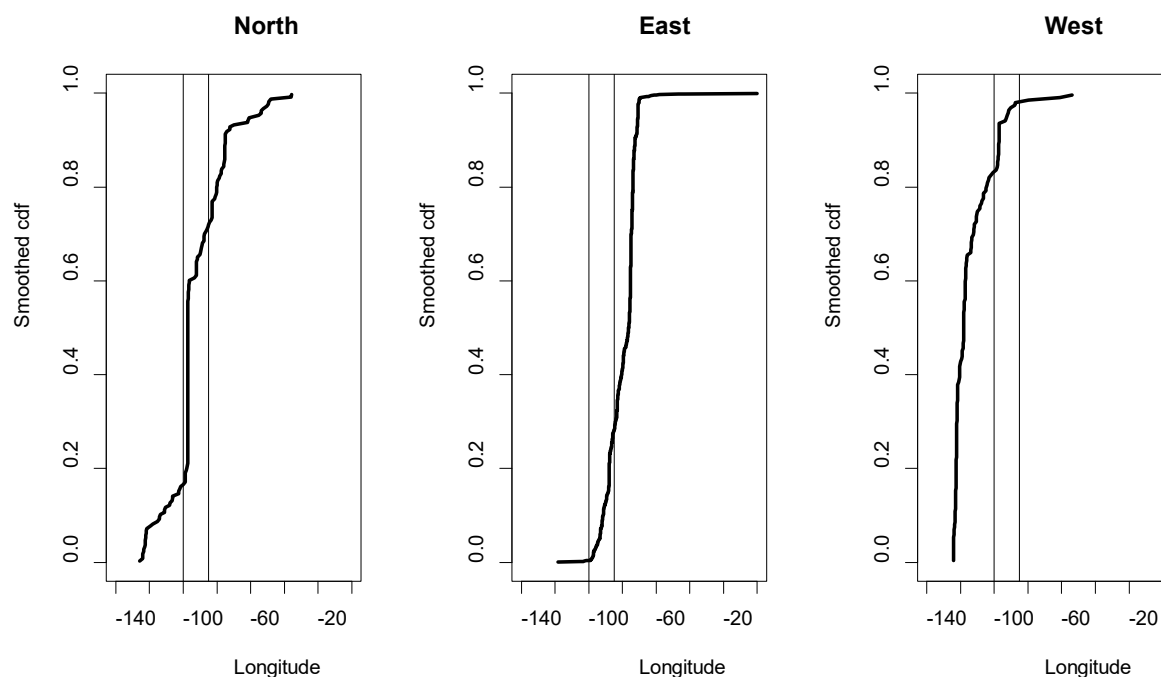


Figure 2. Cumulative distribution functions for reencounter longitudes of first-year peregrine falcons banded just prior to fledging from three management populations. The vertical lines represent longitudes relevant to management (100° W and 85°W longitude).

We used a lognormal generalized linear model to assess the correlation between banding natal latitude and migration distance. We used banding latitude of nestlings and juveniles as the predictor variable, and distance between banding and encounter as the response variable. Because distances had to be >0 , we used the natural log of distance as the response variable in the model:

$$\log(\text{distance}) = \beta_0 + \beta_1 \times \text{Lat} + \sigma^2$$

We also ran an intercept-only model to see whether a model with banding latitude as a predictor had a lower AIC than a model without that predictor (Burnham and Anderson 2001). We fit the model and derived predicted values using the `glm` and `predict.glm` packages in program R (R Core Team 2021). The AIC values indicated that a model with banding latitude (AIC = 6129.5) as a predictor fit the data better than a model without the predictor (AIC = 6801.2). The parameter estimate for banding latitude and its SE indicated that there was a strong positive correlation between banding latitude and distance (estimate = 0.14, SE = 0.005, 95% CI = 0.13 – 0.15). Therefore, like the 2008 EA, this analysis suggests that migration distance increases with increasing natal latitude in North American peregrine falcons (Figure 3).

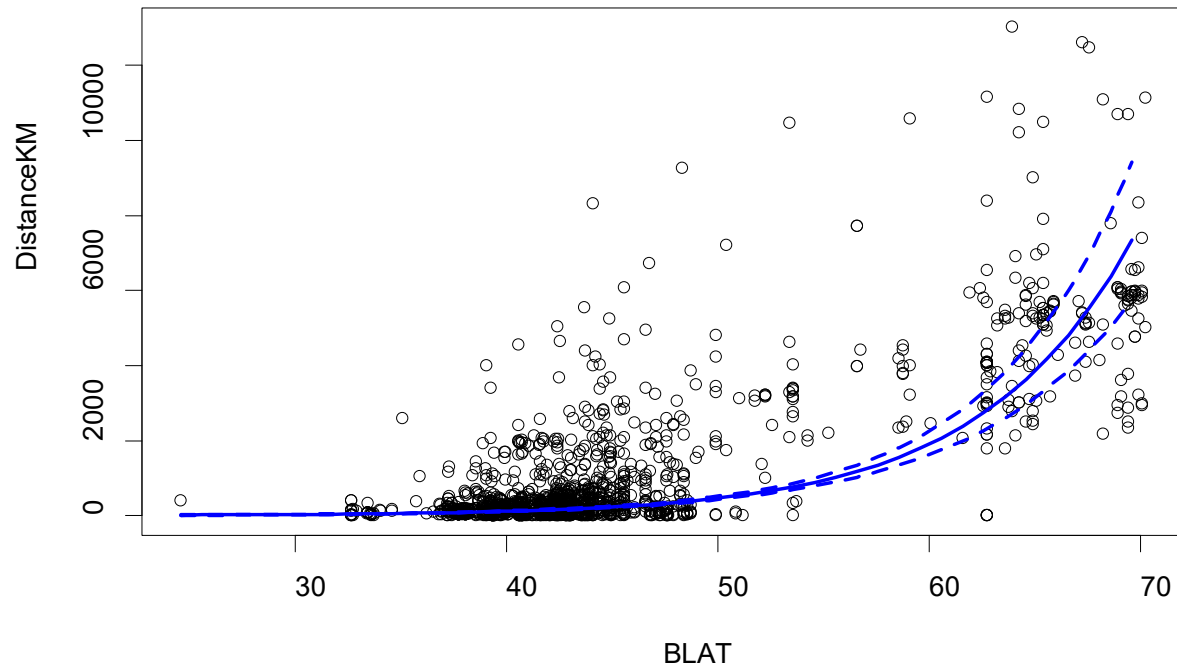


Figure 3. Migration distance (in km) as a function of banding latitude for first-year peregrine falcons banded throughout the U.S. and Canada just prior to fledging. Points represent observed data. The blue line represents the predicted values from the log linear model with 95% prediction interval (dotted blue lines).

We also compared encounter latitude among populations using generalized linear models where the reencounter latitude was the response variable, and the population of origin was the predictor variable. Mean migration and winter reencounter latitude differed among the three management populations as well. Fitted estimates indicated that the recovery latitudes were higher for the eastern (0.39, 95%CI = 38.63 – 39.64) and western (36.71, 95% CI = 35.37 – 38.06) and lower for the NMP (28.38, 95% CI = 27.13 – 29.63).

Timing is an important consideration in managing take of migrant peregrine falcons, because focusing take at the time of peak migration of Northern peregrines increases the likelihood of encounters with individuals from the NMP (Taubert et al. 1999, USFWS 2008). The Service (USFWS 2008) analyzed data from fall raptor banding stations and showed that about 92% of reencounters with peregrines in the NMP occur from 20 September through 20 October. Their analysis was consistent with a peer-reviewed paper that analyzed migration data from various locations throughout the U.S. that was published around that time (Worchester and Ydenberg 2008). Nonetheless, the Service committed to undertaking an analysis of hydrogen isotopes from feathers of passage peregrines in the 2008 EA (USFWS 2008) to further assess timing of birds from the NMP. That work provided further support that the majority of NMP birds migrated through the U.S. from 20 September to 20 October (Franke et al. 2016).

4.4 Take Assessment

The current take limit for peregrines is 116 Y1 birds through August 31 west of 100° longitude in the U.S. (including AK), and 144 Y1 birds east of 100° longitude in the U.S. (USFWS 2008). Although actual take has been <50% of the maximum allowable, the current maximum allowable represents only 0.4% and 4.5% of production for the NMP and SMP, respectively.

The USFWS (2023) used the prescribed take level (PTL, Runge et al. 2009, Johnson et al. 2012) framework and estimated an allowable take rate of 11% assuming a management objective (F_0) of 1 (i.e., MSY). The take rate derived from the PTL represents a sustainable rate with take occurring in all age classes. Since take for peregrines would target Y1 birds, which have a lower contribution to population growth compared to older birds, and the management objective was less than MSY, the PTL provides a conservative estimate of allowable take under MSY. Regardless, 50% of the conservative PTL is >5%, of Y1 birds so actual allowable take under normalization would be slightly more conservative.

Based on the estimates of population size for Y1 peregrines, maximum take of 5% of Y1 individuals would allow removal of 1,324 Y1 individuals from the NMP, and 158 Y1 individuals from the SMP annually. The USFWS (2023) derived yield curves based on output from the IPMs and they indicated that maximum allowable take under normalization were on the right-hand side of the curves indicating that they were conservative given current demographic rates.

5.0 Environmental Consequences of the Preferred Alternative and Alternatives Evaluated

We used the status and take assessment published by the Service (USFWS 2023) as the basis for evaluating the environmental consequences of the proposed action and alternatives considered in this revised EA. The take assessment indicated that take of $\leq 5\%$ of Y1 would be less than one half of maximum sustainable yield. Further, yield curves indicated that take of $\leq 5\%$ is on the right side of the yield curve, which is sustainable and stable compared to being on the riskier left side of the yield curve. Normalization is the most liberal action being considered, therefore all actions analyzed would meet the objective of sustainable take under current environmental conditions and population status. Choosing the preferred action should be based on the secondary management objective of maximum potential falconry opportunity over the largest geographic area within the take limits estimated based on 5% of Y1 birds.

5.1 Preferred Alternative

The proposed action would result in immediate normalization with take levels of $\leq 5\%$ of first-year birds without seasonal constraints. This would lead to allowable take levels that would be set by the Flyway Councils anywhere between current levels up to 1,324 Y1 individuals from the NMP, and up to 158 Y1 individuals from the SMP any time throughout the year. The Flyways and states will be able to set take numbers and seasons within maximum allowable as is implemented in current regulations for peregrines and other raptors under the general falconry EA (USFWS 2007). The analyses in this EA indicate that normalizing peregrine falconry take, consistent with the current falconry regulations, can meet the goals of conserving the species, providing the maximum potential falconry opportunity nationwide, and reduce administrative burden on federal and state agencies.

5.2 Alternative 1 – No Action

The No Action alternative is currently overly restrictive relative to the management objective given recent status trends of peregrine falcons in the southern U.S. and Canada. The Service committed to revisiting peregrine falcon management strategy if the population status in Canada changed and the SMP population recovered. In November 2017, the Canada Wildlife Service (CWS) designated *F. p. anatum* as “Not at Risk” and the Service found that the SMP has been steadily increasing (USFWS 2023). In addition, recent information from Canada also indicated that the NMP was larger than estimated in the 2008 EA (Franke et al. 2016).

5.3 Alternative 2

Alternative 2 is restrictive concerning the take limit, which would remain at current levels, but does expand the season length to provide more flexibility to target specific management populations. Specifically, this alternative would extend the season length by approximately 2

months west of 100° W longitude, which allows for more take of peregrines from the NMP in that region. The season east of 100° W longitude would allow for take prior to Sept 20th and for approximately 10 days after October 20th, which could allow for slightly more take of birds from the SMP.

5.4 Alternatives Considered, but not Evaluated

The Service considered alternatives 3 and 4, but decided not to evaluate them in the EA because they include an implicit objective that is not part of the Service's management objective for peregrine falconry take. Specifically, the stepwise increase was derived from concern about public perception of relatively rapid change in regulations over a short time frame, which is not included in the Service's management objectives. Further, implementing stepwise changes in an EA would greatly increase complexity due to annual changes in overall regulations, determining specifically what the annual changes in overall allowable take would be, and potentially requiring one or more additional EAs. As is currently done with peregrine regulations, the states can set seasons and take limits within the bounds of the allowable take numbers under normalization, which would be a more efficient way to implement stepwise increases if managers desire graduated increases in allowable take.

5.5 Cumulative Impacts

The data from the status and take assessment (USFWS 2023) used to support this EA included mortality from additional sources outside of falconry take. Even with the restrictive regulations in place now, estimated take is approximately 50% of what is allowable under the current management strategy. There are roughly 4,900 active falconers in the U.S. that could potentially capture peregrines according to the 3-186a database (T. Nguyem, USFWS, Personal Communication, database queried on 8/10/2023). Therefore, increasing allowable take would not likely significantly increase actual take because there are a limited number of people eligible to apply for a peregrine take permit. We acknowledge there may be some additional unintended mortality associated with capture of passage peregrines, but we suspect such mortality will be exceedingly low and with take being so much lower than allowable, this would not impact population status.

5.6 Monitoring

Given that there is inherent uncertainty in the demographic data used by the USFWS (2023) in the status and take assessment, it is critical that actual take is monitored accurately to ensure that it does not exceed the maximum allowable. The Service maintains a database that is populated by falconers when taking wild peregrines (the 3-186a database). This database should be tested for accuracy and annual reports should be produced to summarize how many wild (as opposed to transfers or rehab releases) peregrines were taken, where they were taken, and when they were

taken. This information would be critical to tracking actual take from the two management populations. The States provided estimates of actual take (USFWS 2023) and current take is roughly 50% of allowable (Table 1; USFWS 2023). If actual take starts approaching the maximum allowable set by the States, the Service will work through the Flyway councils to take regulatory actions to restrict or close take.

The allowable take estimates derived by the USFWS (2023) were calculated by multiplying an estimate of current Y1 population size by the take rate (i.e., 0.05). The USFWS will monitor population trends based on BBS data for the SMP and migration data for the NMP to determine whether there is concern about declines in the overall populations and the Y1 age class. The Service will update the estimate of Y1 and estimated allowable take (i.e., updated Y1 * 0.05) every five years. Therefore, BBS and migration counts should continue to be conducted throughout the U.S.

The Service will update the estimate of allowable take rate under MSY every 10 years using available demographic data, including survival and productivity, to ensure that 0.05 continues to be $<1/2$ of MSY. States should continue to monitor local peregrine falcon occupied territories and productivity, and all leg banding and recoveries of those bands. These data were crucial for estimating annual fecundity rates and assessing predicted population sizes in the IPMs (USFWS 2023) and are important for setting state-level take limits within the population maximum allowable. All leg banding and recoveries of any bands from birds that died or were recaptured were critical for estimating survival and tracking movements, so leg-banding peregrines with individually identifiable leg bands should continue throughout the U.S. The data described in this paragraph would be necessary for periodic updates to the status and take assessment.

The state of Washington and the Service are collaborating to analyze information on *P. f. pealei* along the western part of the state and will use information from that analysis to determine potential local regulations in that region.

Recently, stakeholders have expressed concern over the influence of recent outbreaks in Highly Pathogenic Avian Influenza (HPAI) on peregrine falcon population trends. Trends in population can be monitored by periodic updates from the BBS for the SMP and migration counts for the NMP, which were used as the time series for the IPM's derived by the USFWS (2023) for assessing population status. HPAI directly affects survival of Y1 and older peregrine falcons. The band recovery data used by the USFWS (2023) status assessment are too sparse to estimate short-term survival rates, so additional monitoring effort (e.g., satellite transmitters) would be needed if stakeholders are interested in estimating such short-term changes for adjusting the management strategy.

5.7 Trans-boundary Effects of the Proposed Action and Alternatives

Peregrine falcons are a highly migratory international resource. Stocks targeted for take in this EA are produced at nest sites in the U.S., Canada, and Greenland, and spend the winter throughout the temperate U.S., Caribbean, Mexico, Central America, and South America. This

EA considers impacts on all these source populations, and the preferred action is not likely to have measurable, negative effects on any of them. Canada, Mexico, and the United States participate in the Trilateral Committee for Wildlife and Ecosystem Conservation (Trilateral), and issues of mutual concern regarding migratory birds are discussed there at the Migratory Bird Table. We believe the Flyway councils and Trilateral afford ample opportunities for the countries of Canada, Mexico, and the U.S. to coordinate matters of concern regarding the take of migrant peregrines. The Ministry of Environment and Nature in Greenland has previously expressed concern regarding take of Y1 migrant peregrine falcons, primarily because they do not support take and possession of wild birds in captivity. We will continue to communicate with the Ministry of Environment in Greenland as requested.

6.0 Public Review

The Service reviewed recent data and analyzed a range of management alternatives for take of peregrine falcons for use in falconry and is proposing to revise the take limits for peregrine falcons for use in falconry. This EA is intended to inform the public of the proposed action and alternatives and disclose direct, indirect, and cumulative environmental effects.

Currently, the Service requires the release of captured peregrines wearing research bands (USFWS 2008). This constraint was intended to further reduce the likelihood that peregrines from non-target populations would be captured as part of the 2008 management plan. However, this constraint also introduces bias in the peregrine band recovery dataset and complicates data analyses that include data from 2008 to the present. Given recent updates to the status of North American peregrine populations (COISEWIC 2017, USFWS 2023), the Service intends to consider whether this constraint is still warranted in reaching a final decision regarding the alternatives put forth in this EA and is seeking input on potential impacts of retaining or removing this constraint.

The Service's analysis of peregrine falcon status was current through 2019 or 2020, depending on the management population. In December 2021, a new strain of highly pathogenic avian influenza (HPAI) was detected in North America, and information suggests that strain of HPAI was particularly virulent in raptors, including peregrine falcons (The Raptor Center 2024, USFWS 2024). Anecdotal evidence has been circulating among raptor biologists that HPAI may have caused local declines in peregrine falcon populations since 2021. As part of the public review and comment process for this EA, we are seeking credible information on the possible population-level effects of the recent HPAI outbreak on peregrine falcons. The Service intends to consider this and other new information in reaching a final decision regarding the alternatives put forth in this EA. Please refer to <https://www.fws.gov/library/collections/peregrine-falconry-ea> for information about the comment submission process and timelines.

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