

**DRAFT MONITORING PLAN FOR REESTABLISHMENT OF THE
NORTHERN APLOMADO FALCON (*Falco femoralis septentrionalis*)
IN NEW MEXICO AND ARIZONA**

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Introduction

The goal of the northern aplomado falcon (*Falco femoralis septentrionalis*) (falcon) reintroduction effort in New Mexico is to reestablish successfully breeding falcons in suitable habitat of the Chihuahua desert grasslands in New Mexico and Arizona in order to produce a self-sustaining falcon population that is not dependent on continued releases. A “self-sustaining population” is defined as a group of two or more pairs of falcons that maintain or increase their numbers without augmentation. Falcons are predicted to persist as a self-sustaining population or as subpopulations in the largest, unfragmented portions of their historic range. Details of the reintroduction effort can be found in the Proposed Rule (70 FR 6819) and Draft Environmental Assessment for Reestablishment of the Endangered Northern Aplomado Falcon into New Mexico and Arizona, dated February 9, 2005, which is available from the above address, or from the U.S. Fish and Wildlife Service (Service) Web site at <http://ifw2es.fws.gov/NewMexico/>.

We propose to reintroduce falcons in New Mexico under section 10(j) of the Endangered Species Act (Act). Implementation of this action requires that the Service periodically review and evaluate the reintroduction program. This monitoring plan will assist the Service in our program review of restoration efforts. The plan has two purposes: 1) To assist the Service in our evaluation of the release program as described in the proposed rule and environmental assessment, and 2) to provide guidelines for continued large-scale monitoring efforts in New Mexico and Arizona.

A Federal agency may not conduct or sponsor and a person is not required to respond to a collection of information unless it displays a currently valid Office of Management and Budget control number. Monitoring requirements and recommendations are described in two tiers. Tier 1 short-term monitoring includes basic monitoring requirements for newly released birds and for nesting falcons beginning 3 years after their reintroduction. The Peregrine Fund will be responsible for implementing Tier 1 monitoring, described below under “Releases” and “Post-release.” The Peregrine Fund will submit annual reports on their falcon release monitoring results to the Service. The Bureau of Land Management (BLM) and U.S. Army Fort Bliss will be responsible for remote-sensing habitat data monitoring relevant to the reintroduction program. Tier 2 monitoring described below includes nonmandatory monitoring efforts subject to available funding. Annual stakeholder meetings will be conducted to review project data to determine if refinements to the program are needed. The Service will use the best scientific and commercial data available, including, but not limited to, results from the monitoring plan and stakeholder meetings to prepare 5-year evaluations of the restoration program.

Tier I: Short-term Monitoring

Releases

The Peregrine Fund will select hack sites based on, but not limited to, the extent and proximity to other suitable habitat, potential threats from predators, prey availability, and logistics. Suitable habitat for release sites may therefore be different from the suitable nesting habitat ultimately selected by the falcons. Monitoring at the hack site will be conducted by The Peregrine Fund employees. Information gathered at each hack site will include field notes detailing behavior, predator interactions, and the number and identity of falcons reaching independence 21 days

after release. In addition, an assessment of the release site using the attached habitat assessment sheet (Attachment A) will be completed, and four digital photos will be taken from the hack site, one in each cardinal direction, immediately prior to and after the release effort. Although release sites are not selected based on habitat characteristics alone, through time, habitat data from release sites may increase our understanding of factors affecting falcon releases and habitat use. Landowner consent is a prerequisite for data collection on private land.

Post-release

In order to ascertain the success of the release effort, The Peregrine Fund will annually survey the area surrounding releases to locate surviving birds. Post-release monitoring will not be required until the third year after releases begin because falcons do not normally breed until they are 3 years of age.

Falcons will be located and identified and the number of territorial pairs will be recorded. If nesting is documented, then nest success will be assessed and as many chicks will be banded as possible. A habitat assessment sheet (Attachment A) will be completed by The Peregrine Fund to evaluate the surrounding area. Blood may be taken from individuals for laboratory studies.

All released falcons and their progeny will be banded to the extent possible. The Peregrine Fund will coordinate with the Service to develop a banding plan that complements banding efforts in Mexico and Texas.

The BLM and U.S. Army Fort Bliss biologists will gather remote-sensing digital raster data for nest sites and territories (greenness index and deviation from greenness) from the Internet during the breeding season when nesting occurs, beginning approximately 3 years after releases begin. This data will provide an assessment of vegetative growth conditions that may be compared to nesting success.

Tier II: Long Term Monitoring and Investigations

Long-term Monitoring

Under Tier II, in conjunction with surveys to help the Service assess the release effort, long-term monitoring and surveys for falcons in suitable habitat in New Mexico and Arizona should continue where applicable, and should also be conducted in areas that have not been previously or recently surveyed. When possible, the Interim Survey Methodology for the Northern Aplomado Falcon in Desert Grasslands (U.S. Fish and Wildlife Service 2003) should be used; however, established road survey techniques for raptor species may also be sufficient. Biologists from The Peregrine Fund, Turner Endangered Species Fund, BLM, Department of Defense, New Mexico and Arizona State Game and Fish Departments, and the Service will be responsible for long-term monitoring and surveying. Attachments A and/or B should be completed when appropriate. In the future, if it becomes necessary to collect this information from 10 or more respondents per year, the Service will first obtain approval from the Office of Management and Budget.

Data collected for long-term monitoring and surveys should at minimum include all raptors and ravens observed. In addition, the Service recommends counting and identifying all avian species at these survey points, similar to the Breeding Bird Surveys, as this can provide information on

avian prey availability for falcons. For documentation of the full complement of avian species within the survey area, all auditory and visual detections should be recorded as in the Breeding Bird Survey protocol. We recommend including general vegetation and habitat descriptions of the area, emphasizing relative grass cover height and types and the spacing of prominent woody vegetation.

Documentation of stick nests will assist in the assessment of habitat suitability. All raptor and raven large stick nests located in the course of the survey should be tallied and their location marked with a Global Positioning System unit. Data collected for each nest site should include nesting activity and species identification if active. All suspected falcon nests should be viewed from a sufficient distance that precludes disturbing falcons near the nest site.

Survey areas should consider historical or potential occurrence of falcons and/or the existence of potential habitat within the area. Survey routes should be delineated in a manner that provides a complete survey of all potential habitats within the area. Routes will vary in number and length, depending on size of the area and amount of potential habitat to be surveyed. If the potential habitat area is large, multiple routes will need to be designated within the area for adequate coverage. The survey area, habitat types, survey routes, and observation points should all be documented on U.S.G.S. 7.5 minute maps.

Although falcons may inhabit their range year-round, they will be most conspicuous from February 1 through August 31, which spans their periods for courtship, nesting, and the post-fledging season (Hector 1981; U.S. Fish and Wildlife Service 1990; Montoya *et al.* 1997). Therefore, to maximize the likelihood of detecting falcons, surveys are best conducted during this period.

Weather and time constraints are necessary to ensure that surveys are conducted when detections are not reduced by wind, precipitation, or temperature. Therefore, surveys should be conducted in the mornings from sunrise to 4 hours after sunrise. Weather information should be recorded on the survey data form at the beginning of the survey. Any changes in the weather should be noted during the course of the survey. Supplemental surveys may be conducted in the evenings from 4 hours before sunset to sunset. Surveys should only be conducted when there is no precipitation or sustained wind speeds of ≤ 16 kilometers per hour (≤ 10 miles per hour).

Investigations

Tier II investigations will include any research other than that required under Tier I. These may include, for example, studies regarding the biology of the falcons or their ecological requirements. Tier II investigations are not mandatory and will be funded independently of Tier I activities. It may also be necessary to contact the appropriate State agency regarding their permitting requirements for certain activities, such as handling falcons. Biologists from The Peregrine Fund, Turner Endangered Species Fund, BLM, Department of Defense, New Mexico and Arizona State Game and Fish Departments, and the Service will be responsible for performing the investigations.

Reporting

The Peregrine Fund will provide an annual report to the Service by February 1 of each year detailing the previous year's release efforts. At the time of the 5-year evaluation, The Peregrine Fund will provide the Service with a cumulative progress report detailing release efforts and breeding success within the project area. In addition, the BLM and U.S. Army Fort Bliss will submit a remote-sensing habitat report to the Service annually.

The Peregrine Fund, the Turner Endangered Species Fund, BLM, Department of Defense, New Mexico and Arizona State Game and Fish Departments will provide Tier II investigation and monitoring results via a report to the Service every 2 years, or at the completion of any individual study. Survey results should include: (1) Maps of surveyed areas, (2) completed survey data forms, (3) a narrative of the results and any observations of interest (i.e., other species of interest, notes on habitat suitability, and nest availability), (4) photographs documenting falcons and/or habitat, and (5) shape files compatible with our geographic information system.

Data Sharing

A data-sharing agreement is under development to aid in management for the falcons. Data appropriate to management, such as nest locations, will be shared among the Service, The Peregrine Fund, BLM, the Department of Defense, New Mexico and Arizona State Game and Fish Departments, and the Turner Endangered Species Fund.

Paperwork Reduction Act

Office of Management and Budget (OMB) regulations at 5 CFR 1320, which implement provisions of the Paperwork Reduction Act (44 U.S.C. 3501 *et seq.*) require that Federal agencies obtain approval from OMB before collecting information from the public. A Federal agency may not conduct or sponsor and a person is not required to respond to a collection of information unless it displays a currently valid OMB control number. OMB approval is required if information will be collected from 10 or more persons (5 CFR 1320.3). "Ten or more persons" refers to the persons to whom a collection of information is addressed by the agency within any 12-month period, and to any independent entities to which the initial addressee may reasonably be expected to transmit the collection of information during that period, including independent State, territorial, Tribal or local entities and separately incorporated subsidiaries or affiliates. For the purposes of this definition, "persons" does not include employees of the respondent acting within the scope of their employment, contractors engaged by a respondent for the purpose of complying with the collection of information, or current employees of the Federal government when acting within the scope of their employment, but it does include former Federal employees. The draft monitoring plan for reestablishment of the falcon contains a requirement for information collection; however, it does not affect 10 or more persons. Therefore, OMB approval and a control number are not needed for the data collection forms appended to the monitoring plan. In the future, if it becomes necessary to collect this information from 10 or more respondents per year, we will first obtain approval from OMB.

Literature Cited

- Hector, D.P. 1981. The Habitat, Diet, and Foraging Behavior of the Aplomado Falcon, *Falco femoralis* (Temminck). Masters Thesis, Oklahoma State University, Stillwater, Oklahoma.
- Montoya, A.B., P.J. Zwank, and M. Cardenas. 1997. Breeding biology of the aplomado falcon in desert grasslands of Chihuahua, Mexico. *Journal of Field Ornithology*, 68(1):135-143.
- U.S. Fish and Wildlife Service. 1990. Northern Aplomado Falcon Recovery Plan. Albuquerque, New Mexico. 56 pages.
- U.S. Fish and Wildlife Service. 2003. Interim Survey Methodology for the Northern Aplomado Falcon (*Falco femoralis septentrionalis*) in Desert Grasslands. Albuquerque, New Mexico. 16 pages.

APLOMADO FALCON HABITAT SUITABILITY ASSESSMENT PROTOCOL WORKSHEET (VER. 1.2)

Point Id: _____ Date _____ General Location: _____

Observers _____ UTM E: _____ UTM N: _____
 Datum _____

Observers: _____ Aplomado falcon present Y ___ N ___ .

Photo # _____ azimuth _____ Documented aplomado falcon use area Y ___ N ___ .
 Photo # _____ azimuth _____
 Photo # _____ azimuth _____
 Photo # _____ azimuth _____ Size of assessment area _____.

Process	Action/ Decision	Score
Level 1	If an aplomado falcon is detected during assessment visit or it is a known aplomado falcon use area complete the entire form through level 3.	
	1. Substantive grassland (see defn. in instructions) present in assessment area (area should be $>2.5\text{km}^2$)	
	1.0= Yes 0= No	
	2. Relief appears flat to gently rolling, ≤ 5 degree (10%) slope in assessment area	
	1.0= Yes 0= No	

If subtotal score is < 2 , discontinue assessing

Level 2

1. Topography in assessment area
 - 1.0= Swale/basin, flat valley bottom
 - 0.7= Gently sloped bajada, gently rolling upland
 - 0.5= Mesa top, steeper bajada
 - 0.2= Rolling, Irregular, hilly (e.g. foothills)
 - 0= Steep hillside, hilltop (reevaluate slope requirement in Level 1)
2. Number of general vegetation community types in assessment area (2.5 km^2 blocks)
 - 1.0= Grasslands + 0 or 1 or 2 others
 - 0.7= Grasslands + 3 others
 - 0= Grasslands + >3 others
3. Land cover within assessment area
 - 1.0= Grassland appears homogenous (uniform or varying species composition and cover), or grassland has clumps/aggregates (not highly interspersed) of woody structure
 - 0.5= Grassland at distinct edge of woody structure
 - 0.3= Grassland with highly interspersed woody vegetation
 - 0.2= Primarily shrubland with interspersed grassland
 - 0= Otherwise

Process	Action/ Decision	Score
4. Raptor nest and/or perch substrates present in or near (within 800m) assessment area	1.0= Yucca & others 0.8= Yucca only 0.5= Arborescent Mesquite, Rhus or similar species 0.2= Others only (including power, telephone poles, or fence posts) 0= No	
5. Evidence of anthropogenic disturbance/fragmentation within assessment area	1.0= Little or no disturbance (e.g., two-track) 0.5= Moderate disturbance/human activity (e.g., maintained road, single building) 0.2= Obvious fragmentation and/or disturbance (e.g., regular human activity, oil, or gas developments) 0= Serious anthropogenic conversion (e.g., plowed fields, severe grazing, or multiple activities) -- reevaluate grassland requirement in Level 1.	
6. Alteration of grassland system (e.g., changes in species composition or dominance, shrub encroachment, or soil erosion)	1.0= Little or none 0.5= Some to moderate (e.g., minor erosion, obvious presence of "increaser" grass species) 0= Substantial (e.g., severe shrub encroachment, severe erosion -coppice dunes, gullying)	

Level 2 comments

If subtotal score is <3.5, discontinue assessing

Measure criteria 1-4 in the grassland portion only of the assessment area.

Level

1. Grass basal cover (grassland area only) in assessment area

- 1.0= $\geq 15\%$ Ocular est. ____ Quantitative
- 0.8= 10-14%
- 0.5= 5-9%
- 0= 0-4%

2. Grassland species composition (grassland area only) in primarily

- 1.0= Grama and/or tobosa grassland Ocular est. ____ Quantitative
- 0.9= Mixed grassland (variety of grassland species present)
- 0.5= *Sporobolus* (dropseed, sacaton) grassland
- 0= Other

3. Woody vegetation density (shrubs ≥ 0.5 m tall/ha) (grassland area only)

- 1.0= < 300 plants/ha Ocular est. ____ Quantitative
- 0.5= 300 - 600 plants/ha
- 0= 600 plants/ha

Process	Action/ Decision	Score
4. Woody vegetation canopy cover (grassland area only) 1.0= < 6% canopy cover 0.5= 6 - 13% canopy cover 0= > 13% canopy cover	Ocular est. ____ Quantitative	
5. Woody vegetation species presence in assessment area 1.0= Yucca and/or Ephedra 0.5= Arborescent Mesquite/Rhus or similar tree 0= Other	Ocular est. ____ Quantitative	
6. Number of available raptor or raven nests 1.0= > 2 in assessment area 0.8= 1-2 in assessment area (maximum if ocularly estimated) 0.5= None in assessment area, but ≥ 1 within 800m of assessment area. 0= None in assessment area, and none within 800m of assessment area.	Ocular est. ____ Quantitative	
If subtotal score is between 2.5 to 4 for ocular estimates, quantitative evaluation may be necessary to conclude habitat potential.		
If subtotal score is ≥ 3.0 , the area is considered potential habitat. Further detailed habitat evaluation such as prey availability may be considered necessary.		
Level 3 comments:		

Diagram of assessment area

APLOMADO FALCON SURVEY DATA FORM

Survey Route Description:

County: _____ USGS Quad Name(s):

Survey Location: UTM Coordinates _____ E _____ N Elevation:

Lat/Long Coordinates T__ R__ Sec(s)

Survey Date: __. __. __. Survey Time: Start _____ End
Day Month Year

Weather: Wind Speed (max) _____ Temperature (max) _____ Cloudcover %

Primary Observer: _____ Other Observer(s):

Survey mode: Vehicle__ Walk__

Individual Species Observed by Station:

TUVU BLVU GOEA BAEA MIKI BSKI NOHA SSHA COHA NOGO
BWAH RTHA SWHA RLHA FEHA WTHA HAHZ ZTHA OSPR **APFA**
CRCA AMKE MERL PRFA PEFA CORA CHRA AMCR LOSH

* = Large stick nest present. ◆ = unlikely, needs verification

Notes _____

