

Re-introducing captive-bred juvenile northern aplomado falcons to south-central New Mexico, USA

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Introduction

The northern aplomado falcon (*Falco femoralis septentrionalis*) is endemic to Mexico and the southwestern United States. The species is currently listed as endangered under the U.S. Endangered Species Act. The aplomado is listed as a Species of Least Concern on the IUCN Red List and is on Appendix II of CITES. The re-introduction project took place on the privately owned Armendaris Ranch and environs. The Ranch consists of approximately 1,439 km² in south-central New Mexico, east of the Rio Grande River. The ranch is located at the northernmost edge of the aplomado falcons' known historical range, within the Jornada del Muerto basin of the Chihuahuan Desert. Topography consists mostly of an open valley plain with primary habitats of Chihuahuan Desert scrub and desert grassland.

Goals

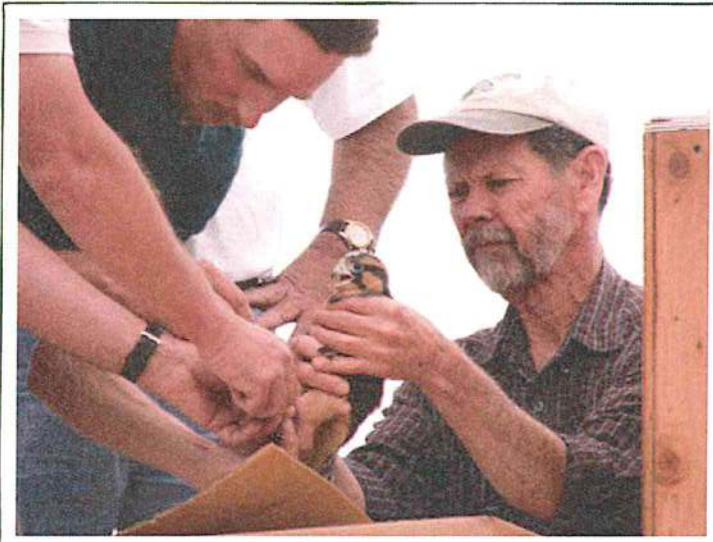
- Goal 1: Re-introduce captive-born aplomado falcons to suitable habitat.
- Goal 2: Increase survival of recently released falcons through the provisioning of food to maximize free-flying experience in the absence of food stress.
- Goal 3: Restore a viable population.

Success Indicators

- Indicator 1: Numerous sightings of re-introduced aplomado falcons during supplemental feedings and monitoring surveys.



Stooping aplomado falcon at the Armendaris Ranch, New Mexico



Aplomado falcon being readied for release

- **Indicator 2:** Aplomados thrive and stay in the release area by finding sufficient prey, avoiding predators, and reproducing.
- **Indicator 3:** Wild-born falcons survive and reproduce.

Project Summary

Feasibility: The aplomado falcon inhabits open grassland savannas scattered with tall soap tree yuccas (principally *Yucca treculeana*), in the Chihuahuan Desert and

eastern Mexico. Aplomados do not build their own nests but depend on the presence of abandoned nests of similarly sized birds. Aplomados hunt via direct flights, sometimes cooperatively, and also utilize kleptoparasitism. Avian prey is the primary source of dietary biomass followed by insects. In all habitats, aplomados are indirectly dependent on nearby woodland, shrubland, and wetland bird communities for regularly abundant prey. Our project aimed to restore a viable population of aplomado falcons by re-introducing captive-born birds to the Chihuahuan grasslands of the Armendaris Ranch and environs. The Armendaris is privately owned and managed by Turner Enterprises, Inc. for ecological restoration including livestock production of native plains bison and high quality hunting of several quail species.

The aplomado was once considered a common resident in south-central New Mexico until about 1930 when sightings of the species began to decline. Potential reasons for the decline include pesticides, specimen collection, lead ingestion, electrocution, collisions with fences and power lines, drowning in livestock watering tanks, drought, disease, genetic disorders, prairie dog extirpation, loss of suitable habitat, a lack of abandoned available stick nests, and a decrease in available prey. In 1986, the aplomado was listed as endangered under the U.S. Endangered Species Act. In 1990 a recovery plan was authorized and called for restoring at least a population of 60 breeding pairs. In 2006, the Armendaris was chosen as the first release site in New Mexico because it had historically supported the species and offered secure and extensive seemingly suitable habitat. The re-introduction project was a collaborative effort involving the Peregrine Fund, the U.S. Fish and Wildlife Service, New Mexico Department of Game and Fish, Turner Enterprises, Inc., and the Turner Endangered Species Fund.

Implementation: From 2006 through 2011, 102 captive-born aplomado falcons were released on the Armendaris. Standard raptor hacking procedures for

releasing the birds were used and involved holding the animals in a hack box for 7 - 10 days on an elevated platform erected in suitable habitat, and then releasing them at an age that corresponded with natural fledging. To promote survival and encourage the aplomados to establish residency near the release sites, hack site attendants provided supplemental food in the form of freshly thawed Japanese quail (*Coturnix japonica*), twice a day for approximately 40 days. To further improve survival, an extended supplemental feeding program was implemented after the standard 40-day period for all release years. Additionally, to improve habitat for the released aplomados on the Armendaris, in 2007, 20 artificial nest platforms were placed in areas lacking suitable nesting structures.

Post-release monitoring: In all years aplomado falcons were monitored throughout the year on and around the Armendaris via driving surveys. During the supplemental feeding program, observations of birds were recorded while food was available. Aerial surveys were also conducted strategically. In 2010, eight motion-activated trail cameras were deployed in locations frequented by aplomado falcons. In 2011, 10 falcons were equipped with VHF radio transmitters to document movements and mortality as part of a larger study by The Peregrine Fund. Annual spring surveys revealed that releases at the Armendaris led to the formation of nesting pairs at the ranch in 2007, 2009, and 2011. The 2007 pair fledged two chicks, the 2009 nesting attempt failed, and the 2011 pair fledged three chicks. Because none of the fledglings were banded their fates are unknown. However, from 2007 to October 2010 an un-banded female aplomado falcon resided at the Armendaris and regularly attended extended supplemental feedings. Circumstantial evidence suggests that this female was one of the chicks fledged in 2007 and, as an adult, was a part of the failed nesting attempt in 2009. The extended supplemental feeding program seemed to promote the survival and retention of recently released falcons and their eventual reproduction. Unfortunately, these benefits did not translate into improved long-term survival or population establishment. Although most of the radio-telemetry units deployed in 2011 malfunctioned, three mortalities attributed to avian predators were confirmed. The final fates of the majority of released aplomados remains largely unknown. It seems likely that most, if not all, of the birds did not survive to reproduce. Because of this no falcons have been released at the Armendaris Ranch since 2012 and no releases are planned for the future.

Major difficulties faced

- Poor survival and/or retention of re-



Aplomado falcons on hacking platform

Birds

introduced aplomados likely due to drought, shrub encroachment, inadequate prey populations, and predators.

- Determining the status of recently released falcons.
- Gaining support from collaborators to test improvements to the re-introduction protocol by including an extended supplemental feeding program.
- Gaining support from collaborators to complete a comprehensive assessment of the re-introduction effort.

Major lessons learned

- Regularly assess assumptions about the suitability of the re-introduction location including habitat, sufficiency of prey populations, and abundance/distribution of predators.
- Create local awareness of the project to promote reliable identification of birds to better determine the status of recently released aplomado falcons.
- Maintain clear communication between project collaborators about expected roles, on the ground experiences, and the need to test methods for improving re-introduction protocols.

Success of project

Highly Successful	Successful	Partially Successful	Failure
			√

Reason(s) for success/failure:

- Habitat, as defined by prey populations and the abundance/distribution of predators, was of insufficient quality.

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