

HISTORICAL EYRIE PEREGRINE FALCON MONITORING PROJECT
1987 BIG BEND NATIONAL PARK, TEXAS

On Thursday March 5, 1987, a pair of Peregrine Falcons were observed using a hole in the cliff face of the Historic Eyrie area of Big Bend National Park. Bonnie McKinney (U.S. Fish and Wildlife Service) identified them as pair #44, observed courting one week earlier at the mouth of Santa Elena Canyon, approximately 2.5 km upstream (pers. comm. B. McKinney and Jack Norland, National Park Service observer).

The 1987 eyrie location is the same, or adjacent to, the 1977 eyrie hole documented by Chihuahuan Desert Research Institute (CDRI) in 1978.

The eyrie hole is located on the upper cliff tier of the Mesa de Ponce escarpment, 2.5 km southeast of the mouth of Santa Elena Canyon. The cliff

"stands approximately 460 meters in height and consists of two tiers of continuous cliff face divided by a talus slope." (CDRI 1978) The eyrie is located in a round opening with a passageway sloping downward and back out of sight. The actual nest site is completely hidden from view. The cliff faces northeast and the eyrie faces north by northeast. Distance from the river to the cliff rim

is approximately 460 meters. Distance of the eyrie below the rim is approximately 60 meters and the distance to nearest water approximately .7 km. The Castolon road is approximately 1 km distant (CDRI 1978).

Vegetation surrounding the Historic Eyrie "...falls into two plant communities, the flood plain/arroyo and the shrub desert. ...Outside Santa Elena Canyon flood plain vegetation forms a broad belt with fingers extending up the arroyos. Plants typical of the shrub desert lie above the river flood plain and arroyos. The shrub desert includes talus slopes of the escarpment and the tops of mesas," (CDRI 1978).

"As of 1987 researchers have identified 425 species of birds..which represents the largest diversity of birds to be found in any U.S. National Park." (E1)

Paisano, X #1, Big Bend National Park). The flood plain below the eyrie is rich in bird life and offers abundant hunting territory for the Peregrine. Observation points were located on the U.S. side of the Rio Grande, approximately ¼ mile (by line of sight) from the eyrie, near the boat launch on Castolon Road. The vehicle pull-out above the boat ramp was the highest and only point where we were able to view the chick(s).

Starting on March 5, 1987, and continuing through April 30, 1987, an observer was present for approximately 5 hours daily, 6 days per week. (The eyrie was observed by Bonnie McKinney the 7th day.) Early morning observation hours were most productive due to the higher activity levels of the falcons and the eastern exposure of the cliff face. Heat waves and direction of sun caused poor to extremely poor lighting during the afternoon.

A Bushnell 25X spotting scope and a pair of Nikon 8X30 binoculars were used for eyrie observation. After April 5, Mike Fleming (Big Bend National Park) supplied a Celestron 46X scope.

NESTING CHRONOLOGY

An adult pair, identified as pair #44 by B. McKinney (U.S. Fish and Wildlife Service), nested on the Historic Eyrie cliff near Santa Elena in 1987. Incubation began approximately March 5, 1987, and continued to April 5, 1987. At least one young was observed prior to termination of observation at 2045 hours on April 30, 1987.

On March 5, 1987, pair #44 were observed using a hole at the Historic Eyrie cliff. The female was visible at the eyrie ledge for 5 hours (0645-1145), but was not incubating eggs. The female left the eyrie for 55 minutes (1124-1218). During her absence the male stayed in close proximity to the eyrie but did not incubate. At 1218 hours the pair began incubation switches. The female incubated (or was out of sight in the eyrie) for 1½-2 hour periods, then left, with the male taking her place for approximately 40 minutes in-between. As brooding progressed, the male was observed incubating for longer time periods, averaging 1½-2 hours.

At first, incubation switches and food transfers were accompanied by vocalizations, but by March 24, 1987, (18 days later) we noticed that the parents had become silent during all interaction observed, including prey transfers and eyrie defense. On April 4, 1987, one day prior to estimated pip, we noticed a change in the pair's behavior. They were in and out of the eyrie more often and aggressively defending nesting territory. Increased activity and stooping in the eyrie area continued for several days.

On April 9, 1987, the male took food in to the female at the eyrie, then left. This was the first time we observed the female staying in the eyrie with food. We presumed she was feeding young.

On April 14, 1987, the female began leaving the eyrie for short 1-5 minute periods during flights out and back into the eyrie. By April 16, 1987, she was

standing in the entrance for 30 minute periods. Also on the 16th, the male and female were observed flying together in the eyrie area for 10 minutes (0738-0803). The 8:00 a.m. temperature that day was 55 degrees which indicates an increasing ability by the young to stay warm without insulation of parent. On April 19, adults were absent for 1 hour and 5 minutes between 0827 and 0932. The 8:00 a.m. temperature was 69 degrees. By the 21st the female was spending as much time (during observation hours) out in front of the eyrie as she was back inside with the chick(s).

On April 25, 1987, at 1124, the female began leaving the eyrie for long periods to stoop and cack at a horizontal crack approximately 100 yards to the right and above the eyrie. On April 29, 1987, between 0659 and 1217 (5 hours and 18 minutes) the female entered the eyrie 3 times and spent a total of 16 minutes there. During this time period the female stooped and cacked or perched near the horizontal crack, watching for 3 hours and 12 minutes. For 1 hour and 37 minutes she was perched in the eyrie vicinity or flying with the male. Agitated behavior by the female continued through the next 5 days until observation ended. The male flew by the female several times but did not join in stooping or cacking. The source of disturbance was never discovered by us.

On April 30, 1987, we observed from 0700-1221 (5 hours, 21 minutes) and 1715-2047 (3 hours, 32 minutes). Finally, at 2024, 16 minutes before stopping observation, we saw one chick walk toward the entrance and mute. We watched it for 3 minutes until it moved out of sight in the eyrie. This is our only sighting of young, except brief flashes of white believed to be wing or head movements. There was at least one chick in the eyrie, possibly more.

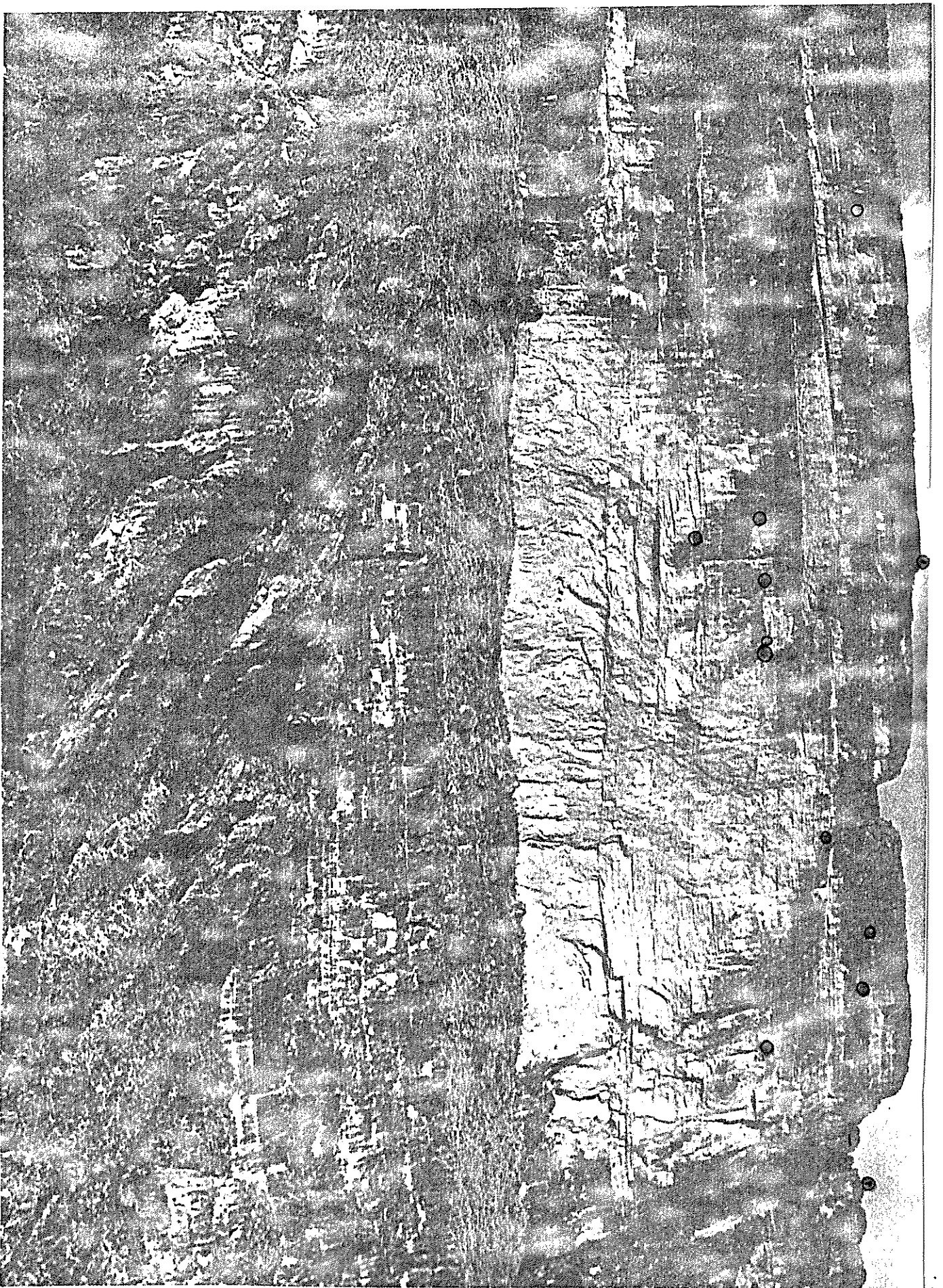
UNUSUAL INCIDENTS

3/15/87	(1843) Peregrine Falcon soared among vultures over the mouth of Santa Elena Canyon.
3/21/87	(0944) Female tail-chased large falcon out of eyrie area, no cackling or stooping.
3/21/87	(1800-1915) We watched a Peregrine hunting in the mouth of Santa Elena Canyon. It soared among Turkey Vultures spiraling over mouth of canyon, and seemed to be using the Turkey Vultures for cover between stooping on Rough-winged Swallows and White-throated Swifts. At times it was only 100 feet above us. There were 15 people in the confluence area. At times the Peregrine stooped up and down the cliff, extremely close to the face and appeared to be flushing swallows and swifts off the face. At 1849 it rejoined the vultures soaring. (1904) It stooped from perch and hit raven. Raven headed out of area and Peregrine continued hunting.
3/24/87	(0652) Two falcons circled above mouth of Santa Elena Canyon. Identified one as a Peregrine, other were unknown. They soared in close proximity for approximately 2 minutes then drifted apart. The Peregrine landed on the Texas cliff and the other falcon was last seen flying downriver. (0703) Peregrine left perch and flew out of sight over Texas side of canyon.
4/1/87	(1830-1840) Peregrine hunting mouth of canyon amidst Turkey Vultures.
4/4/87	(1145) Male in eyrie incubating. Female flew up to eyrie and landed on right side of ledge. Third Peregrine landed on eyrie ledge left of female and directly in front of eyrie hole. Female lunged at "intruder" and both went over ledge backwards with talons locked. Female was above intruder as they fell. Male stooped out of eyrie in pursuit. Male and female drove intruder from area. Wind made vocal identification questionable but sounded like rapid "chupping" while female and

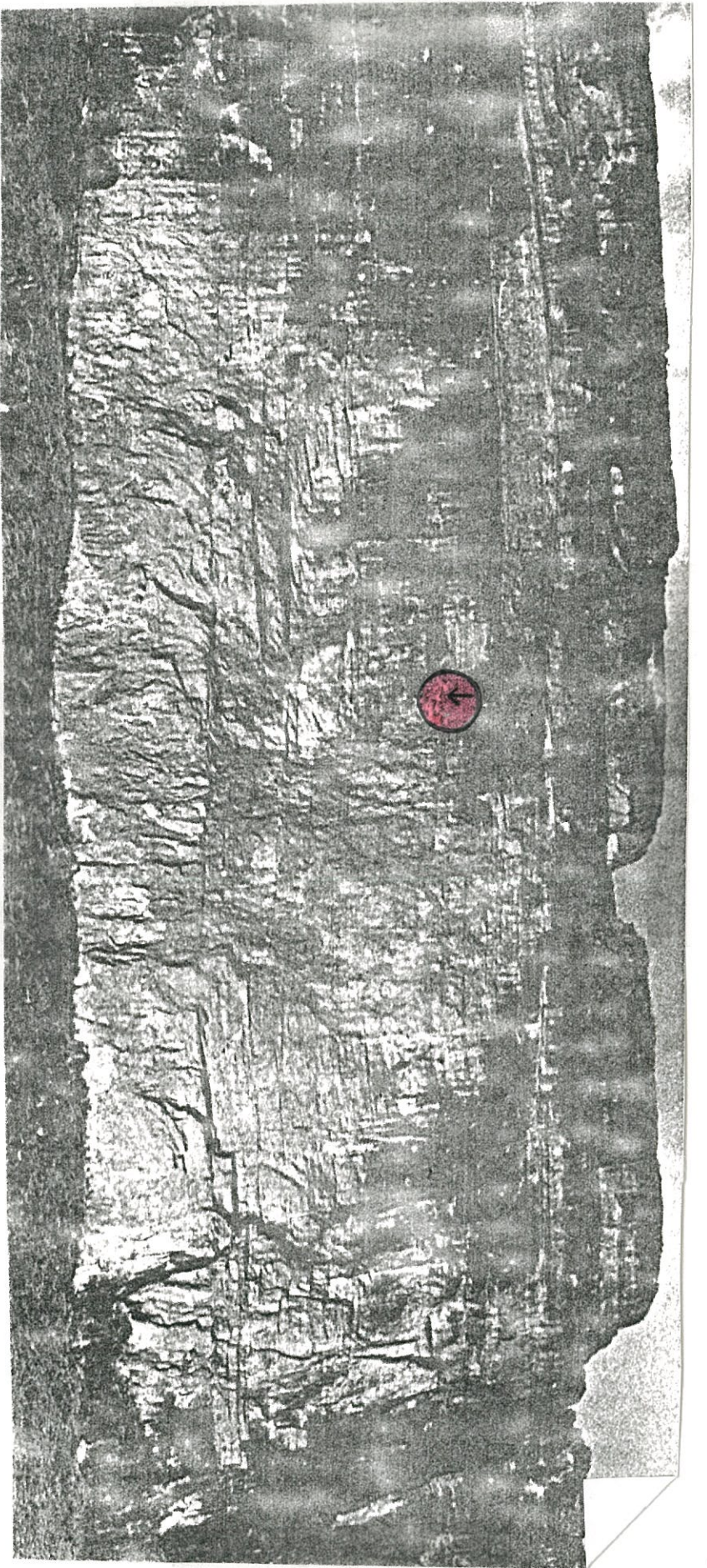
intruder were falling. No other vocals. (1147) Two minutes after leaving, male flew back into eyrie. (1208-1231) Male flew back and forth in eyrie area.

2/26/87

It was our understanding that pair #44 were observed by J. Norland and B. McKinney displaying typical courtship behavior (copulation, hole hopping, scraping, aerial displays) at the mouth of Santa Elena Canyon. One hole in particular on the lower tier of the "Texas Cliff", directly above the nature trail, was being scraped in often. From this behavior it was assumed that the pair has chosen the hole as an eyrie site (Aptine Avalanch 1987). Within 8 days of the February 26, 1987, observation, however, the pair were incubating eggs at the Historical Eyrie site approximately $\frac{1}{4}$ mile downstream.



Common perching sites



1987 Eyrie location

POTENTIAL EYRIE DISTURBANCES

A) Aircraft	
3/6/87	Single engine in eyrie area.
3/8/87	Cessna 172 low, right over eyrie.
	Single engine, high and ¼ mile of eyrie.
	Two military jets, low, within ¼ mile of eyrie.
3/9/87	Twin engine low in area.
3/24/87	Single engine in area from 0912 through 1031.
4/5/87	Twin engine, low over observation point towards eyrie, turned and flew above river towards Santa Elena Canyon.
4/9/87	Single engine, low in area.
4/14/87	Single engine, low in area of observation. point 1032, 1041, and 1141.
4/20/87	Single engine, over eyrie, LOW.
4/23/87	Single engine, low over observation point.
4/28/87	Military 4-engine airplane, out of mouth of Santa Elena Canyon below rim, then over river towards Historic Eyrie, circled back towards Santa Elena Canyon, low.
4/29/87	Twin engine, low, within 1/8 mile of eyrie along rim.
	Twin engine, low, directly over eyrie.
	Twin engine, low, over eyrie and on towards mouth of Santa Elena Canyon.
B) Motorized River Traffic	
3/6/87	Small motorboat passed below eyrie - 3 fishermen.
3/7/87	National Park Service jet boat on river (pers. comm. John Morelock, National Park Service River Ranger).
3/8/87	National Park Service motor boat heads upriver from put-in below eyrie-rescue mission .

C) Miscellaneous

4/8/87 (1134) Possible gun shots. A sharp crack, then echo traveled

upriver from south of observation point towards Santa Elena

Canyon. Repeated 3 times.

4/8/87 (1042) Male Peregrine (pair #44) circled directly above observer

12 times. This observation point was directly below the eyrie, on

other side of Rio Grande, and the closest observation point to

the eyrie.

3/10/87 Three horseback riders on bench below eyrie, herding stock.

4/27/87 Noisy group at boat launch.

(Use levels at the boat launch, below the eyrie, could not be

monitored from the eyrie observation point used. Any possible

impact to the nesting pair launch users is unknown.)

D) Other Raptors

A pair of Red-tailed Hawks (Buteo jamaicensis) used the south buttress of the

canyon mouth as a nesting site and successfully fledged at least one young. No

interaction between the pair of Red-tailed Hawks and Pair #44 were observed.

In early morning, owls were heard calling in the vicinity of the river. No

observation of interaction with Peregrines.

Two adults and one immature Golden Eagle (Aquila Chrysaetos) were observed

near the mouth of Santa Elena Canyon early in the study period. No interaction

with the Peregrine.

Prairie Falcons (Falco Mexicanus) were observed on two occasions: one near

the canyon, and once on the flood plane below the eyrie. No known interaction

with the Peregrines.

Sharp-shinned Hawks (Accipiter Stratus) and American Kestrels (Falco Sparverius)

were observed several times, but no interaction with the Peregrine.

Black Vultures (Coragyps Atratus), Turkey Vultures (Cathartes Aura) and Common Ravens (Corvus Corax) in the eyrie area. For the most part the Peregrine did not respond to their presence (that we could tell), except around the time of pip (April 4-7) when vultures and ravens in the eyrie area were driven off, and after April 27 when the female began stooping and cackling at an unidentified object in a crack near the eyrie. Both parents became aggressive in defending the nesting territory at this time.

A third Peregrine Falcon entered the eyrie area April 4th and was driven away.

CONCLUSION

Incubation and pip appear to have progressed normally after possible site abandonment at Santa Elena Canyon. Incubation was believed to have started on or around March 5, 1987. Pip was estimated to occur between April 5 and 7, and the parents' behavior indicated that this was correct. Care of the young progressed normally until April 29, 1987, when the female started showing disturbed behavior, spending long time periods stooping and alarm-calling. At termination of observation the female was still showing disturbed behavior, but the pair were defending and taking food into the eyrie. At least one young was observed on the final day of observation April 30, 1987.

Expected date of fledge: May 17-20, 1987

ACKNOWLEDGEMENTS

Our thanks to Mike Fleming, Resource Manager at Big Bend National Park, for his hospitality and the use of binoculars and Celestron scope. Also for granting us the use of Park eyrie records and National Park Service housing. Our thanks to Sheri at Big Bend National Park Dispatch for her help in arranging to have our checks cashed, and information about the area. Our special thanks to Castolon Rangers Kathy Hamblly and Deborah Forbes for their help and for making us feel at home there. Our thanks to John Moreland, National Park Service River Ranger, for his enthusiastic help and support.

Our thanks to Lee Daniels, National Park Service Volunteer, and to Howie at Castolon Store for their hospitality. Our thanks to Bonnie McKinney, U.S. Fish and Wildlife Service Peregrine Falcon Researcher, for her support and for sharing her knowledge of the Peregrine Falcons of Big Bend National Park. Our thanks to Bill Heinrich and Peter Harritty of The Peregrine Fund, Inc. for their support and information on breeding chronology of Peregrine Falcons. Thanks also to The Peregrine Fund, Inc. for allowing us to use their optical equipment and tripods. Thanks to National Park Service Volunteer Jack Norland for contributing to the field work at Santa Elena Canyon.

Our special thanks to The Peregrine Fund, Inc., for providing us with a unique opportunity to learn about and study Peregrine Falcons at Big Bend National Park.