

Recent Observations on Peregrine Falcons *Falco peregrinus* of the Cape Verde Islands, Atlantic Ocean

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ABSTRACT

Surveys were made in March and April of 1997 and 1998. In all, eight islands in the Cape Verde group were visited including Cima, the location of the first published breeding record in 1963. Anderson saw a total of ten individuals on three of the islands but none on Cima. The most recent summary by Hazevoet (1995) indicates definite sightings or specimen records for only six islands and suggests that the species is rare. Observations from 1997 and 1998 support the notion of its rarity.

INTRODUCTION

The Peregrine Falcon *Falco peregrinus* is one of the most widely distributed bird species and some 19 subspecies have been recognized (White & Boyce 1988). The majority of them (16) occur either continentally or within large island groups such as Madagascar (*F. p. radama*) or Indonesia (*F. p. ernesti*). Only 3 subspecies (*F. p. nesiotes*, *furuitii* and *madens*) are completely limited to small archipelagos (the Fijian, Volcano, and Cape Verde Islands respectively). The latter two are considered the rarest and most threatened races of Peregrines in the world (White 1994). From 16 March to 14 April 1997 and 18 March to 14 April 1998 Anderson (CMA) visited the Cape Verde Islands off western Africa to look for resident Peregrines to determine if Peregrines still existed on the islands, check the status of the only historically known nest site, and better document their breeding phenology

AN HISTORICAL PERSPECTIVE

The first literature record of Peregrines in the Cape Verde Islands was reported by Bocage (1902). He refers to a female taken at an unknown date and locality, but apparently not at a breeding site, on São Nicolau island in 1901 at 300 m elevation. This specimen was destroyed in 1978 during a fire in the Museu Bocage, Lisbon, Portugal, but had been previously examined and described by de Naurois (1970).

The next records were provided by the Yale University American *Blossom* expedition in 1923-1924 (Bannerman 1968). This expedition collected three more specimens; an adult female at Povação

(now Vila Nova Sintra) on the island of Brava, an immature female also from Brava taken in February or March 1924, and an adult male on the island of Santiago near Pedra Badejo, 22 April 1924. Based on these three specimens Ripley and Watson (1963) described a new race of Peregrine *F. p. madens*. The trinomial *madens* means saturated, apparently in reference to the rufous suffusion to the plumage.

On 6 August 1951 Bourne (1955) observed what he concluded were Peregrines around cliffs at the highest point between Praia and Pedra Badejo. Then, in 1963, the first known Peregrine nest site was recorded (de Naurois 1969) when on 6 March a breeding pair was found on Cima in the Rombos islands. The eyrie, on cliffs at the south end of the island, contained a week old nestling and two infertile eggs.

de Naurois returned to Cima again, on 26 January 1965, and found falcons nesting on the same cliff, although on a different ledge. He found a single egg judged to have been laid between 14-26 January but later found three eggs indicating that onset of egg laying was 24-26 January. He also collected the adult female. de Naurois wrote that local fishermen had reported a second nesting pair on the north coast of Brava, near Furna, and presumed it to be the location where the *Blossom* falcons were collected.

By far the best and most complete summary of modern Peregrine sightings in the Cape Verde Islands is provided by Hazevoet (1995) who lists definite sightings (including collected specimens) from five islands: Santiago (7 sightings), Brava (2), Cima (4), Branco (1), and São Nicolau (1). He also includes tentative sightings from 4 other islands: Fogo (1), São Vicente (1), Santo Antão (?) and Boavista (1). The total number of definite sightings up to 1995, excluding specimens, was 11, and 15 including specimens. Addition of all tentative records raised the total to 19. Hazevoet (pers. comm.) had an additional record from near Praia since his publication, bringing to 20 the total sightings of Peregrines in the Cape Verde Islands.

RESULTS

Sightings

The five islands visited in the Cape Verde's in 1997 were: Sal (16-18 March, 14 April), Santiago (18-24 March, 9-14 April), Brava (25 March-5 April), Fogo (5-8 April), and Cima (31 March). In 1998 CMA visited three more islands: São Vicente (21-22 March), Santo Antão (23 March- 6 April), and São Nicolau (7-12 April). In 1997 CMA observed a minimum of ten individual Peregrines (Table 1) on three of the islands (Sal, Santiago, and Fogo). CMA saw no Peregrines on Cima or Brava, despite a 12 d visit. In 1998 no Peregrines were seen on the three islands surveyed.

Most (70%) of the Peregrines seen were adults and on the island of Santiago. One group of four involved a family of both adults and two young. CMA observed two other probable pairs of adults again on Santiago. On Fogo, an adult female occupied the crater south of Chã das Caldeiras and on Sal, a single immature approximately two miles north of Espargos represent range extensions for the species in the Cape Verdes, although Hazevoet states accurately that Peregrines probably occur in very small numbers on all islands and islets.

Breeding data

Historical Nesting Site.

CMA visited Cima 31 March 1997 (1100-1400 hrs). The island is long, low, and narrow with a basalt headland, ca. 400 m long and 30 m high, at the south end. The highest point of the island is some 77 m. Although some of the cliffs drop directly into the Atlantic, most are accessible from below. CMA was able to examine the entire, but fairly limited, cliff habitat either from above or below. Although CMA spent only 3 hrs on Cima he was confident that Peregrines were not nesting during the time of his visit. However, it is possible that Peregrines may now inhabit the more inaccessible islets of the Rombos group, primarily Ilhéu Luiz Carneiro to the west, although he was not able to survey either it or Ilhéu Grande or Sapado. These islands should be a high priority in future surveys.

Table 1. Peregrine Falcon sightings on the Cape Verde Islands, 1997.

<i>DATE</i>	<i>ISLAND</i>	<i>COMMENT</i>
17 March	Sal	Immature, male?
21 March	Santiago	Adult male Adult female
23 March	Santiago	New eyrie with Adult male Adult female Immature female
6 April	Fogo	Adult female
11 April	Santiago	On mountain peaks Adult male Adult female
13 April	Santiago	Same family group seen on 23 March (above) Adult male Adult female Immature male Immature (sex?)

Since de Naurois' visits in the 1960's, human visitation to Cima has increased substantially, primarily because of the availability of outboard motor boats. Residents told CMA that the best local fishing occurred in the shallow waters surrounding Cima and fishermen often camped there. He found evidence of campsites below most of the cliffs. In addition, a large concrete light station has been constructed at the top of the cliffs. Harvesting of seabirds for human consumption is still practiced and CMA observed it on Cima. There were thousands of petrel nesting burrows distributed throughout the sandy parts of the island. CMA thought that the absence of falcons was due to human interference although 12 old petrel kills (eaten in typical falcon fashion) suggested that one or more falcons still hunt on Cima.

New Nesting Site

On 23 March 1997 CMA found a new Peregrine nest on Santiago. That eyrie was located in a mountainous region near the centre of the island and at this writing it is the only known active site on Cape Verde. The eyrie is located on a high, precipitous, fin-shaped ridge, about 93 m high and completely inaccessible to humans as relatively loose basalt rock prevents safe climbing. The eyrie was situated at the end of a lava tube which formed a small cave opening to the SSW. The abundant faecal stains (whitewash) suggested that they had used at least two other ledges on this rock.

It seems significant that the site is high in elevation, commands an extraordinary view with good winds, is inaccessible, remote from humans and in one of the wettest areas on Cape Verde.

Breeding Phenology and Reproduction

It has not been established whether there is a distinct breeding season for Peregrines in the Cape Verde Islands. However, de Naurois (1969) confirmed that egg laying on Cima in 1965 ranged from 14-26 January. He determined a hatch date of approximately 28 February in 1963. These two dates are in synchrony for both years and suggest fledging dates (assuming a 34 d incubation, 42 d development period) of about 11 April.

Anderson used this chronology to time his visits. However, at the nest discovered on 23 March 1997, one young female had fledged and was flying strongly. Its fledging date was estimated to be about 15-17 March, suggesting egg laying and hatching dates of 29 December and 1 February respectively, approximately one month earlier than occurred on Cima in the 1960's.

Behavioural observations

Adults were present at the nesting site for at least 18-21 d. after the young fledged. On 4 April, sunset occurred at 1825 hrs. By 1905 hrs, darkness had set in. At 1918 hrs. the adult male flew to the cliff wailing; and "chup" vocalizations took place for 3 min. At 1925 hrs., well after dark, the male uttered "chupping" calls approximately 20 more times with the female answering. Vocalization continued until 1930 hrs.

On 10 April, dawn calls began at 0542 hrs. with the male "wailing" and female uttering "chups" over an 8 min period. Because it started at astronomical dawn the indication was that the pair had roosted at the eyrie cliff. Nothing was heard during the 3 hr period thereafter.

Description of immatures

On 13 April 1997 CMA observed the two fledglings repeatedly within 100 m as they perched on the radio tower near Pico da Antónia. Plumages of sexes were identical. The breasts were tan-cream with narrow, darker brown streaking extending from the upper breast into the undertail coverts. The tail had a broad creamy terminal band, typical of many other young Peregrines. A narrow tan forehead band was above the cere and their throats were clear cream-tan. Feet and tarsus were pale yellow. Dorsally, colouration was "typically" brown, similar to some North American *F.p. anatum*. There appeared to be reddish highlights in the nape. Auriculars were well defined, clear and creamy in colour. Malar stripes were distinct. Slight amounts of down remained on both the heads and tail tips. CMA was surprised at their similarity to the North American *anatum*. In his experience, had he trapped them on migration at South Padre Island, Texas, they would not be recognized as a separate race of Peregrine.

Notes on adult moult

On 12 April, the adult female at the eyrie had new central rectrices about 3 cm long. This indicated that her tail moult began near fledging of the young, not during egg laying as in many north temperate Peregrines.

Notes on prey

de Naurois (1969) reported "petrels and sparrows" as prey on Cima. Presumably these included the White-faced Storm Petrel *Pelagodroma marina* and the Cape Verde Little Shearwater *Puffinus boydi*. He identified the sparrow as Iago Sparrow *Passer iagoensis*. CMA observed the adult female on Fogo unsuccessfully attacking a group of Spanish Sparrows *Passer hispaniolensis*. At the Santiago eyrie CMA found prey remains of several Rock Dove *Columba livia* and a Grey-headed Kingfisher *Halcyon leucocephala*.

CONCLUSIONS AND DISCUSSION

New information on a little known population

Overall there had been a lack of published information on the Peregrines of the Cape Verde Islands, even following their diagnosis and naming as a distinct subspecies. While several of the observations or collection dates suggested that the individuals might have been near or at breeding sites, only one nesting location with two different sites was known. CMA confirmed breeding at an additional location on a separate island. Projected dates of the egg laying fell within the general timing of earlier known breeding dates suggesting there was a distinct "breeding season" and that egg laying may start as early as late December and as late as late January.

Moult (based on the single female) may differ slightly from other Northern Hemisphere populations. It seemed not to start in the female during incubation but rather after young had fledged. If this is the case, implications as to what drives the moult would be interesting to investigate.

Estimates of population size of Cape Verde Peregrines

Population size or density on islands is of particular importance in understanding conservation. Usually small island populations have limited genetic heterozygosity and consequently may be prone to extinction. Further, in the case of the Cape Verde Islands it is not known if all islands have suitable conditions for Peregrines or how far the falcon might wander to find such conditions, e.g., from island to island. Few authors have attempted to address the difficult issue of determining the size of

the Cape Verde Peregrine Falcon population. Estimates vary widely, because of the limited knowledge of this species on the islands. Most of the projected numbers are relatively low although most values given for falcons, in general, tend to underestimate their populations.

The least reliable numbers for the Cape Verde's are those on the low end of estimates. They are based on second hand information. King (1981) relied heavily on the fact that falcons had been reported from few islands and from discussions with R. de Naurois (pers. comm.). King suggested no more than 6 pairs. White (1994) used similar sources to arrive at the value of 6-8 pairs and when White discussed the matter with de Naurois in 1990 (pers. comm.) a higher value seemed warranted. Interestingly de Naurois earlier (1969) was more optimistic and suggested a total population of 30-50 individuals but fewer than 10 pairs for the archipelago. Lastly, Hazevoet (1995) used recent information and literature sources to arrive at a population of perhaps less than 20 birds.

Finally, current studies on the Common Kestrel *Falco tinnunculus* by S.M. Hille (this volume) and on the Osprey *Pandion haliaetus* by J. Ferreira and L Palma (this volume) on the Cape Verde Islands shed some light on Peregrine densities. Researchers on both studies have spent considerable time in the field in Peregrine habitat, especially so for the coastal studies on Ospreys, and they have failed to see Peregrines. Our studies, taken together with all the other information, support the notion that the Peregrine Falcon in the Cape Verde Islands is a rare bird.

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