

Evidence of breeding White-faced Storm-petrel *Pelagodroma marina* on St Helena Island, South Atlantic: vagrancy or a relict from human pre-colonisation?

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Abstract

During an overnight ringing expedition to the *Oceanodroma* storm-petrel colony on Egg Island, St Helena in July 2009, a White-faced Storm-petrel *Pelagodroma marina* was found on the ground under an open mist net. The bird was easily captured and close examination in the hand, together with subsequent inspection of photographs, showed that the bird was recently fledged. Biometrics and timing of fledging preclude provenance from the closest colony on the Tristan da Cunha archipelago and the pristine nature of the plumage render an origin from the northerly colonies of Cape Verde or the Selvagens Islands, around 4,000 km distant, unlikely. We suggest this bird probably fledged locally, quite possibly on Egg Island itself, where the substratum is suitable for burrowing. The length of the bird's tarsus was within the range of sub-fossil specimens from St Helena, which show the species was once widespread and abundant there. This recently-fledged individual raises the possibility that a relict population may persist on one or more of the predator-free offshore stacks that surround the St Helena mainland.

Introduction

The island of St Helena, including its 24 satellite islets and stacks, provides the closest nesting location for seabirds within an area of 3,625,000 km² in the South Atlantic Ocean, and yet it supports only modest numbers of relatively few species (Rowlands *et al.* 2008). Abundant sub-fossil remains reveal that the island formerly supported a more diverse seabird assemblage, including three endemic species, two of which likely became extinct due to the introduction of mammalian predators following the discovery of the island in 1502. The White-faced Storm-petrel is known from sub-fossil remains to have occurred on St Helena and the availability of light, sandy soils in which it nests, and the abundance and distribution of sub-fossil remains indicate that it bred in considerable numbers (Olson 1975). There are no published records of any occurrence of White-faced Storm-petrel on St Helena since the island was settled and due to the species' extreme vulnerability to ground predators it is likely to have been rapidly extirpated from the mainland. There have been several records of the species at sea, some between 308 and 424 nautical miles (570–785 km) to the northwest of St Helena in late January and early February (Rowlands 1992), and these were presumed to be birds from the nearest known breeding colony on the Tristan da Cunha archipelago (Richardson 1984), some 2,400 km distant. Here we report the first occurrence of a White-faced Storm-petrel on St Helena, a recent-fledgling found at night within a breeding colony of *Oceanodroma* storm-petrels, on a tiny offshore islet, Egg Island. We discuss the origins of this individual and the prospects for the existence of a relict breeding population on St Helena.

Methods and Results

Egg Island (15°57'57"S 5°46'39"E) is a 5 ha islet, lying less than 100 m from the west coast of St Helena (Figure 1). The islet rises to a maximum height of 79 m and the substratum comprises loose boulders and small areas of finer soils. The islet supports the largest known colony of *Oceanodroma* storm-petrels on St Helena, which may



Figure 1. Egg Island seen from the northwest. The St Helena mainland lies behind Egg Island and to the right lie Peaked Island and Thompson's Valley Island, November 2007. © Mark Bolton.



Figure 2. Recently-fledged White-faced Storm-petrel *Pelagodroma marina*, Egg Island, St Helena, South Atlantic, 23 July 2009. © Mark Bolton

number over 1,000 pairs (pers. obs.). These storm-petrels are currently viewed as conspecific with the Madeiran Storm-petrel *Oceanodroma castro*, but this species complex is currently undergoing revision and MB, RW and GE visited Egg Island overnight on 23–24 July 2009 to trap *Oceanodroma* storm-petrels to clarify their taxonomic status. To our knowledge there has been no previous nocturnal ornithological work on Egg Island and no previous mist netting there. A single 12 m mist net was erected before nightfall, on the east side just below the summit. No form of acoustic attraction was used and the first storm-petrels were trapped shortly after sunset, at 18.00 hours. At 19.30 hours, a small pale bird was noticed resting on the ground directly below the mist net. It was immediately identified as a White-faced Storm-petrel (Figure 2) and easily captured by hand. Close inspection and subsequent examination of photographs by MB and PS led to the conclusion that the bird was recently fledged on the basis of the following criteria:

1. Entire plumage appearing very fresh and unworn, with pristine white fringes to feathers of mantle, scapulars, upper tail coverts, greater coverts and secondaries.
2. Lack of evidence of post-fledging moult: remiges all of uniform age and wear (Bolton & Thomas 2001); body feathers of a single generation.
3. Pointed outmost primary.
4. Claws sharp and unworn.

The following measurements were taken: wing length (maximum chord) 161 mm; bill length (to feathering) 17.6 mm; bill depth (at gonys) 4.6 mm; head and bill length 43.3 mm; tarsus length 43.6 mm; maximum tarsus width 2.8 mm; tail length 70 mm; tail fork 6 mm.

Unfortunately, it was not possible to ring the bird since rings of the appropriate size were not available. The bird was then photographed and released on the ground. The bird was reluctant to take flight but approximately 15 minutes after release it took off and rapidly gained height disappearing from view. We

visited the island overnight again on 29–30 July and erected a mist net at the same location from 03.45–05.10 hours, but the bird was not retrapped.

Discussion

Within the Atlantic, White-faced Storm-petrels are known to breed on Cape Verde (*P. m. eadesi*), the Canaries and Selvagens Islands (*P. m. hypoleuca*), and on the Tristan da Cunha group at Gough, Inaccessible and Nightingale islands (nominat subspecies *P. m. marina*). The three subspecies differ in timing of breeding and body measurements (Table 1). Sub-fossil remains of 51 *P. marina* collected on St Helena show tarsal lengths intermediate between the longer-legged northern populations of the Selvagens and Cape Verde and the short-legged Tristan group population (Olson 1975).

The recently-fledged White-faced Storm-petrel found on Egg Island could not have originated from the closest colonies on the Tristan group, since young from these populations fledge in late December and January (Table 1). The timing of fledging and biometrics of the northern populations are consistent with a northerly origin of the Egg Island storm-petrel, and whilst the measurements of this bird fell within the ranges of both *eadesi* and *hypoleuca*, tail fork and bill length were close to the extremes of *eadesi* (though the latter are based on small samples). However, it seems improbable, given the pristine state of the plumage of the Egg Island individual, that it had flown at least 4,000 km from one of these distant breeding locations. The mean flight speed of four Leach's Storm-petrels *Oceanodroma leucorhoa* returning 4,796 km from release at Selsey Bill, UK to their nests at Kent Island, New Brunswick was 211 km per day (Billings 1968), which equates to a journey time of 19 days between Cape Verde and Egg Island. However, Leach's Storm-petrels are noted for their powerful direct flight, whereas by contrast White-faced Storm-petrels have a curious bouncing flight with abrupt changes of direction (Robb *et al.* 2008) and the long-distance trans-oceanic speed of a fledgling is likely to be considerably slower than that of

Table 1. Timing of breeding and biometrics of White-faced Storm-petrel *Pelagodroma marina* populations in the Atlantic Ocean. Mean, range and sample size in brackets.

Island	Selvagens	Cape Verde	St Helena	Tristan
Subspecies	<i>hypoleuca</i>	<i>eadesi</i>		<i>marina</i>
Laying	Mid Mar – early Jun ¹	Late Jan – Mar	Unknown	Aug – Sep ⁶
Fledging	Jul – Aug ¹	Mid May – Jul	Unknown	Late Dec – Jan ⁶
Tarsus	44.7, 41.1–48.6 (264) ¹ 44.2, 41.6–46.3 (16) ² 45.2, 42.0–47.0 (12) ³ 43.5, 42.6–44.8 (6) ⁴	44.9, 42.4–46.2 (11) ² 45.2, 42.0–48.0 (17) ³ 44.7, 41.7–48.9 (40) ⁴ 44.3, 40.0–49.4 (78) ⁵	42.8, 39.9–45.7 (51) ⁵	40.9, 39.0–42.1 (5) ⁴ 40.7, 40.0–42.0 (7) ³ 41.2, 38–45 (69) ⁷
Tail	79.1, 70–92 (189) ¹ 75.1, 68–84 (16) ²	72.6, 68–79 (11) ²		70.5, 62–75 (9) ⁷
Tail fork	7.0, 3–12 (181) ¹ 7.2, 4–12 (16) ²	4.5, 3–6 (11) ²		
Bill	17.9, 16.3–19.4 (265) ¹ 17.3, 16.6–18.2 (15) ²	18.6, 17.5–20.0 (11) ²		16.8, 14.0–18.5 (34) ⁷
Wing	165.1, 155–176 (265) ¹ 161, 153–171 (16) ²	162, 154–169 (11) ²		160.4, 149–173 (75) ⁷

¹ Campos & Granadeiro 1999 ² Cramp & Simmons 1977 ³ Bourne 1953 ⁴ Murphy & Irving 1951

⁵ Olson 1975 ⁶ Ryan 2007 ⁷ Hockey *et al.* 2005

breeding Leach's Storm-petrels returning to their nests to resume incubation. The fastest long-distance recapture of a ringed migrating European Storm-petrel *Hydrobates pelagicus* travelling between southern Portugal and Norway is of an individual that covered 3,614 km in 33 days (Bolton & Thomas 1999), which equates to a travel time between Cape Verde and Egg Island of 36 days.

In conclusion therefore, it seems improbable that the Egg Island individual originated from a colony on Cape Verde, since it would have incurred noticeable feather damage during the course of the journey which is likely to have taken at least five weeks, at low latitudes where the bleaching effect of sunlight would be expected to have resulted in observable wear of juvenile plumage. Additionally, allowing several weeks for such a journey makes an origin from the Selvagens population, where fledging only begins in July, highly improbable.

The most likely explanation of a recently fledged White-faced Storm-petrel on Egg Island, St Helena, is the occurrence of local breeding. Whilst sandy soils suitable for burrowing nest cavities exist on the St Helena mainland, the presence of introduced mammalian predators, such as Black Rats

Rattus rattus, Brown Rats *Rattus norvegicus* and domestic Cats *Felis catus*, renders mainland breeding extremely unlikely, and we suggest that this bird may have been reared on Egg Island itself. The substratum in the vicinity of the location where the bird was found was suitable for burrowing and it is possible the bird had recently emerged from a nest hole. The fact that the bird was encountered directly below the open mist net without being caught, suggests it had not flown to the location where it was discovered, but had crawled there, though it may have collided with the net without becoming entangled and fallen to the ground. An inspection of the surrounding area revealed several deep crevices from which the bird may have emerged.

The likelihood of breeding White-faced Storm-petrels on Egg Island raises the intriguing possibility that a remnant population may have persisted undiscovered for the last 500 years on one or more of the 24 stacks and islets around the coast of St Helena after the introduction of mammalian predators to the mainland. To our knowledge, none of these islets has been visited at night to search for storm-petrels. Comparison of DNA obtained from a feather sample taken from the Egg Island individual

and that extracted from sub-fossil bones collected on mainland St Helena may resolve the origin of this bird, if sufficient phylo-geographic structure exists among populations within the Atlantic.

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Roseate Terns *Sterna dougallii* successfully rearing a young Sandwich Tern *S. sandvicensis*

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Isle aux Dames in the Bay of Morlaix, northern Brittany (48°41'N 3°53'W), holds one of the largest mixed tern colonies in France, with Sandwich Terns *Sterna sandvicensis*, Roseate Terns *S. dougallii* and Common Terns *S. hirundo*, and this island has been the main French Roseate Tern colony since the 1980s (Cadiou *et al.* 2004; Le Nevé 2005). Annual surveys are conducted to obtain data on breeding numbers and productivity. In 2007 the census of the colony was carried out on 12 June by a team of eight experienced and inexperienced people. Different teams covered different areas of the colony, counting nests, using different colour of small paper marks put inside to avoid double-counting, and reporting nest-contents.