

# THE BREEDING OF LEACH'S STORM PETREL *HYDROBATES LEUCORHOUS* IN THE SOUTHERN HEMISPHERE

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## ABSTRACT

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It is likely that Leach's Storm Petrels *Hydrobates leucorhous* have bred at widely scattered locations in the Southern Hemisphere. The potential for this Vulnerable species to improve its conservation status by encouraging the colonization of Southern Hemisphere localities needs to be investigated.

**Key words:** Dyer Island, Chatham Islands, South Shetland Island, extra-limital breeding, colonization

The global population of Leach's Storm Petrels *Hydrobates leucorhous* was estimated by BirdLife International (2024) to be 6.7–8.3 million breeding pairs, with 40%–48% of these breeding on islands in the North Atlantic Ocean and 52%–60% on islands in the North Pacific Ocean. Despite this huge population, the conservation status of the species is still considered to be Vulnerable due to a decreasing population size in some regions, from an estimate in excess of 20 million near the start of the 21st century (BirdLife International 2024). These northern breeding populations migrate south after the breeding season, mainly to areas of equatorial and coastal upwelling at least as far south as 27°S in the Pacific Ocean and to waters of the continental shelves of Brazil and southern Africa in the Atlantic Ocean (Veit *et al.* 1996, Underhill *et al.* 2002, Spear & Ainley 2007, Pollet *et al.* 2021).

Leach's Storm Petrels have been recorded breeding at three offshore islands of South Africa, and the species has almost certainly bred at a fourth (Underhill *et al.* 2002). Confirmation of breeding was first made in the austral summer 1995/96; by 2002/03, the number of breeding pairs at these four islands was estimated to be 25. In the light of these South African records, this note reconsiders two early records of Leach's Storm Petrels on land: in the Chatham Islands (east of South Island, New Zealand; Imber & Lovegrove 1982) and in the South Shetland Islands (northwestern Antarctic Peninsula; Hahn & Quillfeldt 1998). Based on this knowledge, Pollet *et al.* (2021) noted the potential for Leach's Storm Petrel to colonize locations in the Southern Hemisphere.

The first record to reconsider was made by Imber & Lovegrove (1982) in New Zealand. They visited Rabbit Island (44°14'S, 176°16'W; 5 ha (0.05 km<sup>2</sup>)) from 31 October to 11 November 1980. The island had no mammals and minimal previous ornithological investigations. They were not successful in their objective find a Magenta Petrel *Pterodroma magenta*. Instead, as a “consolation prize,” Imber & Lovegrove (1982) found two Leach's Storm Petrels. One was removed from the bottom of a 0.5-m long burrow; the other was found in dense vegetation. Both were in “fresh plumage” and had “downy” incubation patches. They heard the distinctive call of the species at night on multiple nights during the survey period. They included the phrase “prospecting for nest sites” in the title of a paper describing their observations. They

summarized their discussion by concluding (incorrectly, in the light of Underhill *et al.* (2002)) that “we doubt that there is a breeding population of Leach's Storm Petrels in the Southern Hemisphere.”

In the second record to reconsider, Hahn & Quillfeldt (1998) mist-netted a Leach's Storm Petrel on King George Island in the South Shetland Islands (62°14'S, 058°40'W). The bird was caught at 01h20 on the night of 21 February 1996 in a colony of Black-bellied Storm Petrels *Fregetta tropica* and Wilson's Storm Petrels *Oceanites oceanicus* at a point 110 m above sea level. The authors reported: “According to the brood patch scale of Beck & Brown (1971), the Leach's Storm Petrel was at score 4: surprisingly the brood patch was completely bare with no residual feathering.” Beck & Brown (1971) indicated that this condition is the strongest indicator of breeding.

Underhill *et al.* (2002) reviewed two on-land observations of Leach's Storm Petrel in South Africa that had been made prior to the confirmation of their breeding there in 1995. With hindsight, either of these observations could have led to the discovery of breeding. Firstly, on St. Croix Island (33°48'S, 025°46'E) in Algoa Bay, vocalizations of Leach's Storm Petrel were recorded during 19 fieldwork visits between 26 October and 26 January in every year between 1976 and 1984 (Randall & Randall 1986). Vocalizations were heard on 80% of visits in November and on 100% of visits in December. One bird captured on 24 November 1983 had a small amount of feather wear of the primaries; by implication, there was no primary moult (Randall & Randall 1986). Secondly, at the centre of Dassen Island (33°25'S, 018°05'E), Western Cape, a Leach's Storm Petrel was mist-netted during the early hours of 15 December 1971, flying less than 1.5 m above the ground (Cooper & Edwards 1974). Breeding on Dassen Island was subsequently proven in 2001 (Underhill *et al.* 2002).

With the benefit of hindsight, Imber & Lovegrove (1982) themselves articulated reasons why the Leach's Storm Petrels they observed ought then to have been classified as “probably breeding.” Firstly, the birds “were fully acclimatised to the reversed Southern Hemisphere seasons. They were in fresh plumage.” They pointed out that if the birds were migrants from populations breeding in the Northern Hemisphere, they would have been in moult. Secondly,

they noted that “the breeding season in the Northern Hemisphere begins in April with the first peak of aerial activity reached in May. Corresponding activity at Rabbit Island was displaced by six months.” If Imber & Lovegrove (1982) had known that breeding occurred on South African offshore islands, they would have interpreted their observations differently, and concluded that Leach's Storm Petrels were breeding in New Zealand; they would have recommended that diligent searches should be conducted to confirm this. Breeding in the Chatham Islands was finally confirmed in 2018, 38 years later, when a Leach's Storm Petrel burrow with one egg was found on Rangatira Island (44°21'S 176°10'W). One adult of the breeding pair was killed by a Broad-billed Prion *Pachyptila vittata* and the breeding attempt failed (Pollet *et al.* 2021).

Likewise, if Hahn & Quillfeldt (1998) had been aware in February 1996 that breeding of Leach's Storm Petrels had been confirmed in South Africa a few months earlier, they would have interpreted their observation of a fully developed brood patch as an indication of breeding activity in the mixed colony of storm petrels they were studying, and they would have undertaken an intensive search for the nest burrow.

Several Northern Hemisphere species have colonized parts of the Southern Hemisphere. Barn Swallows *Hirundo rustica* and American Cliff Swallows *Petrochelidon pyrrhonota* were first observed breeding in Argentina in 1980 (Martínez 1983) and 2015 (Salvador *et al.* 2016), respectively. The first known breeding of White Storks *Ciconia ciconia* in South Africa occurred in 1933 (Roberts 1941, 1942), and there have subsequently been several occurrences of breeding from 1961 onwards at scattered localities in the Western Cape (Hofmeyr 2001). The European Bee-eater *Merops apiaster* was first recorded breeding at a single locality in South Africa in 1855 (Layard 1867); the Southern Hemisphere population that breeds in western South Africa and southern Namibia (Underhill 1997) is genetically indistinguishable from the population that breeds in Eurasia (Carreiro de Melo Moura *et al.* 2019). These examples demonstrate that Pollett *et al.*'s (2021) hopes for the establishment of a Southern Hemisphere population of Leach's Storm Petrels are feasible.

Imber & Lovegrove (1982) noted that the Leach's Storm Petrels they observed had annual cycles displaced by six months. For the two species of swallows breeding in South America, this problem was discussed by Winkler *et al.* (2017) and Areta *et al.* (2021). Helm & Muheim (2021) proposed a solution: they demonstrated that the inherited migration program facilitates the switch. It is therefore likely that Leach's Storm Petrel has a small Southern Hemisphere breeding population at widely scattered localities, with an annual cycle displaced by six months. Whether these populations can grow to make a significant contribution to the conservation of this Vulnerable species is a topic for further study.

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