

SHORT NOTE

The birds of Ducie Atoll, Pitcairn Islands, in February 2024

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In February 2024, as part of “Operation Putuputu” to support research and management in the Pitcairn Islands Marine Protected Area, we visited Ducie Atoll (for 36 hours) and Henderson Island (2 days) in the Pitcairn Islands during 13–16 February 2024. Ducie is c. 470 km east of Pitcairn, and is one of the most remote islands in the world; it has had only a small number of research visits (Rehder & Randall 1975). Henderson is 360 km away, and has had considerable scientific study, particularly of its birds (Fosberg *et al.* 1983; Brooke 1995a, b; Brooke & Hartley 1995; Brooke & Jones 1995; Lavers *et al.* 2016; Bond *et al.* 2019). Although scientific visits to Ducie

are few, occasional visits to support the Pitcairn Islands’ Marine Protected Area have occurred in recent years (Nikitine *et al.* 2018; Irving *et al.* 2019; Lincoln *et al.* 2022).

As a result, knowledge of Ducie’s avifauna is sparse and mostly limited to three short visits during the 1991/92 Sir Peter Scott Commemorative Expedition to nearby Henderson Island (March 1991, June 1991, October 1991), each lasting only a few days (Brooke 1995b), a survey of Ducie itself in early 1971 (Rehder & Randall 1975), the 1935 Templeton Crocker Expedition (Chapin 1936), and the Whitney South Seas Expedition in 1922 (Murphy 1922). Only the 1971 survey was in the austral summer (January) and notes on birdlife were limited to a list of species including those recorded by previous expeditions at

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Table 1. Morphometrics of selected seabirds on Ducie Atoll in February 2024. Values are means \pm SD.

Species	Age	n	Mass (g)	Wing length (mm)	Head + bill length (mm)	Culmen length (mm)
Christmas shearwater	Adult	10	315 \pm 22	253 \pm 5	73.7 \pm 3.2	29.9 \pm 1.3
Christmas shearwater	Downy chick	8	319 \pm 40	181 \pm 20	71.0 \pm 2.5	28.5 \pm 1.4
Christmas shearwater	Fledgling	15	346 \pm 36	208 \pm 25	71.7 \pm 1.8	29.0 \pm 1.9
Kermadec petrel	Adult	12	340 \pm 74	272 \pm 26	72.3 \pm 4.6	27.7 \pm 2.5
White tern	Adult	1	75	240	71.7	30.4
White tern	Fledgling	2	95.0 \pm 0	227 \pm 17	70.2 \pm 3.9	26.8 \pm 0.2

other times of the year. Observations of birds during the austral summer are therefore notably lacking, and knowledge about the general phenology and movement of the seabird species found on the Pitcairn Islands is poor. Importantly, previous research trips to Ducie (Williams 1960; Rehder & Randall 1975; Brooke 1995b) all occurred before Polynesian rats (*Rattus exulans*) were successfully eradicated in 1997 (Howald *et al.* 2007; Brooke 2019).

There are 21 bird species known from Ducie Atoll (Rehder & Randall 1975; Brooke 1995b), comprising 13 breeding species, one non-breeding visitor, two migrants, and five vagrants. We provide observations and measurements (where possible) for the non-vagrant species below, with noteworthy observations from Henderson Island and Pitcairn Island for completeness. Measurements follow Baldwin *et al.* (1931).

Kermadec petrel (*Pterodroma neglecta*) – adults were present in reasonable numbers, with aerial courtship activity peaking in the two hours before dusk. All birds were the intermediate morph (Brooke 2004). One bird was found incubating an egg, which measured 58.3 \times 41.8 mm which is notably smaller than those measured in 1991, which had mean dimensions of 64.9 \times 46.4 mm (Brooke 1995a). The mean measurements of 12 adults are provided in Table 1. Adult birds were also observed flying overhead on Henderson Island; however, no search for nests was undertaken, and nesting is largely restricted to the plateau. Brooke (1995a) found birds on Ducie had just begun laying in March 1991, and estimated *c.* 30,000 pairs.

Murphy's petrel (*Pterodroma ultima*) – despite Ducie being their largest breeding site with an estimated 250,000 pairs (Brooke 1995a, b), they had not yet returned from migration and were entirely absent from Ducie and Henderson Islands. They normally return to breeding sites in late March to mid-April (Brooke 1995a; Clay *et al.* 2017).

Herald petrel (*Pterodroma heraldica*) – none was seen on Ducie or Henderson or flying overhead. This includes Henderson petrel (*Pterodroma atrata*) on Henderson Island. None was noted in 1971 (Rehder & Randall 1975). They are present nearly throughout the year on Henderson Island (Brooke 1995a), though care must be taken in separating them from the very similar Henderson petrel, which we also failed to see. The Herald petrel population on Ducie was estimated to be in the tens of thousands of pairs (Brooke 1995a).

Phoenix petrel (*Pterodroma alba*) – none was seen on Ducie or flying overhead. Brooke (1995a) did not record any on Ducie in March, June, or October 1991, in contrast to the 1922 Whitney South Seas Expedition which found them in abundance in March (Murphy 1922). Brooke hypothesised that hybridisation with Herald petrels, with which they share a common cytochrome b haplotype, had resulted in their disappearance (Brooke & Rowe 1996).

Christmas shearwater (*Puffinus nativitatus*) – birds were actively breeding, largely on the seaward side of Acadia Island, one of the islands that comprises the atoll. On Ducie, they apparently have an asynchronous and subannual breeding cycle (Brooke 1995b). Adults were most active in the hour before and after sunrise (0500–0700 PST; sunrise at 06:04 PST), undertaking extensive aerial courtship flights and vocalising in singles and pairs on the colony surface. Chicks spanned a range of developmental stages from completely down-covered to nearly fledged. One breeding pair was found together at a nest site with one bird incubating an egg. The mean measurements for 33 shearwaters are provided in Table 1, grouped by age class including adults, birds that were completely down-covered, and those that had obtained most of their adult plumage (*i.e.*, fledglings). Brooke (1995b) conservatively estimated the breeding population to be 3,000 pairs.

Red-tailed tropicbird (*Phaethon rubricauda*) – five were seen soaring above Henderson on 13 & 16 Feb 2024, and only a single bird was observed flying overhead on Ducie. Brooke (1995b) suggested that they bred throughout the year, and that there were 500–1,000 pairs on Ducie in 1991.

Masked booby (*Sula dactylatra*) – On Ducie, birds were breeding asynchronously, with breeding stages ranging from two eggs (perhaps younger birds, as they were not on an identifiable nest) to full-grown chicks. On Henderson Island, no eggs or young chicks were observed; however, a large, down-covered chick and two mature juveniles (not quite at fledging stage) were captured. There are somewhere around 80–100 pairs breeding on Ducie (Brooke 1995b).

Red-footed booby (*Sula sula*) – several birds were roosting on the island in cabbage-trees (*Heliotropum arboreum*) at night. No nests were seen, though they may have been further inland and not visible from the coast. Breeding on Ducie is quite asynchronous (Brooke 1995b).

Brown booby (*Sula leucogaster*) – a scarce visitor to the Pitcairn Islands (Bond & Lavers 2020), one juvenile was seen flying off St Paul's Rocks, Pitcairn, on the evening of 12 Feb 2024. None was seen at Henderson or Ducie.

Great frigatebird (*Fregata minor*) – as with the red-footed boobies, several juveniles and adults were seen soaring over the island and roosting overnight on Ducie. No nests were seen on Ducie; a search was not attempted on Henderson due to the inaccessibility of the colony. Brooke (1995b) estimated only 10–20 breeding pairs, but up to 80 birds present on Ducie in 1991, where they are thought to start breeding in May.

Brown noddy (*Anous stolidus*) – breeding appeared slightly more advanced than for white terns (see below), as nearly fledged and recently fledged young were seen, but no smaller chicks or eggs. Brooke (1995b) estimated 200 pairs breeding on Ducie in 1991. Some individuals were found stricken on the beach and unable to fly, with their feathers covered in a sticky substance (discussed below).

Black noddy (*Anous tenuirostris*) – none was seen on Henderson or Ducie Atoll. Brooke (1995b) observed 10 in March 1991.

Grey noddy (*Anous albivittus*) – none was seen on Henderson or Ducie Atoll. Brooke (1995b) found 15 nests on the lagoon side of Acadia Island, with highly asynchronous breeding.

White tern (*Gygis alba*) – Birds were breeding highly asynchronously, mirroring previous observations (Brooke 1995b). We located an egg, recently fledged young still being provisioned by parents, and all intermediate developmental stages. The total population was estimated to be 5,000 pairs in 1991 (Brooke 1995b).

Sooty tern (*Onychoprion fuscatus*) – none was seen on Henderson or Ducie Atoll. Brooke (1995b) located five nests on the west end of Acadia Island in late July 1991, which was the start of the breeding season as chicks were present in October 1991.

Wandering tattler (*Tringa incana*) – none was seen on Henderson or Ducie Atoll, though it is a regular migrant through the Pitcairn Islands (Williams 1960; Brooke 1995b).

Bristle-thighed curlew (*Numenius tahitiensis*) – Five individuals were seen on East Beach, Henderson Island on 13 Feb 2024, and three at North Beach, Henderson Island on 16 February. None was seen on Ducie Atoll. (Brooke 1995b) saw one bird on Ducie in March 1991.

Evidence of *Boerhavia tetrandia*

Anecdotal reports from the last 15 years had suggested many seabirds, primarily Murphy's petrels, may be rendered flightless and perish because of sticky seeds of *Boerhavia tetrandia* (a creeping prostrate herb in the family Nyctaginaceae) becoming adhered to their feathers. *Boerhavia* causes avian mortality elsewhere (Wilder 2019), and on Tromelin Island in the Indian Ocean, its distribution on the island increased markedly following the eradication of introduced rats (Le Corre *et al.* 2015), which were also removed from Ducie in 1997 (Howald *et al.* 2007).

While we observed many dead seabirds on the beaches of Acadia Island in February 2024 (Fig. 1), no *Boerhavia* plants or seeds were seen anywhere on the island; the cause of death appeared to be related to an unknown sticky substance which coated the feathers of some birds (Fig. 1). Large numbers of dead birds had been remarked on previously in 1971 (Rehder & Randall 1975), but it was not noted during the Whitney South Seas Expedition in 1922 (Murphy & Pennoyer 1952). No examples of

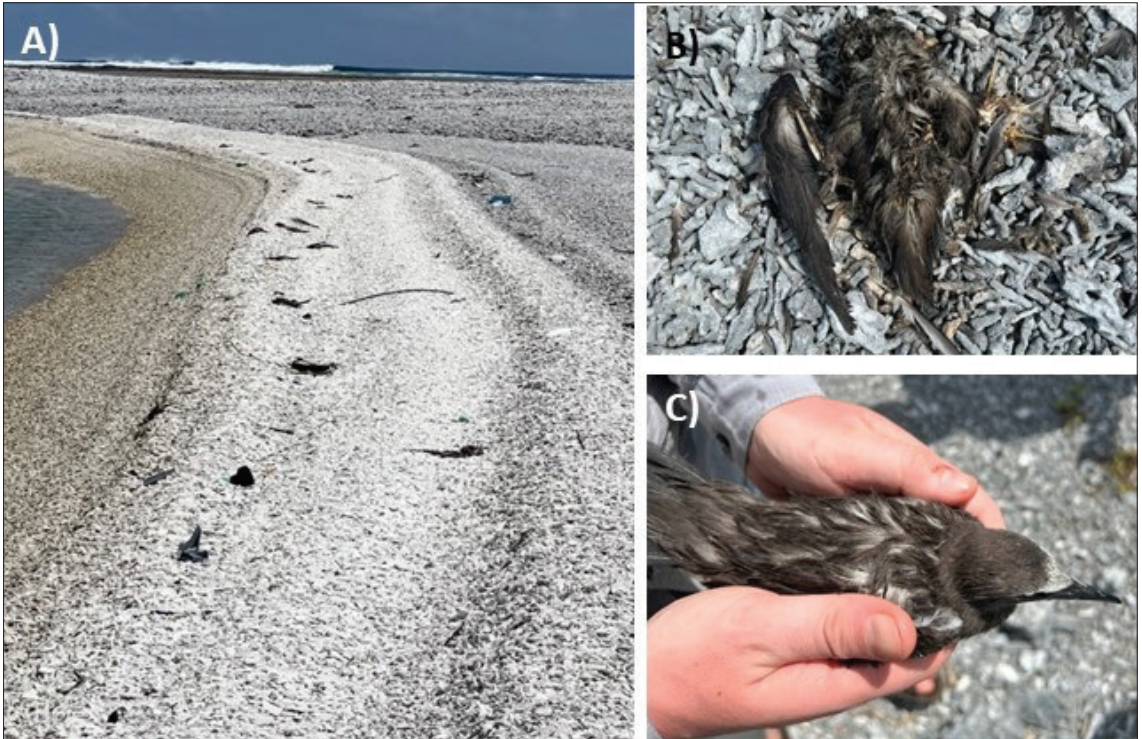


Figure 1. Seabirds (primarily petrels and noddies) along the southern, lagoon-facing beach of Acadia Island, Ducie Atoll in February 2024. Some birds were observed still alive but weak and unable to fly (panel C), their back feathers appeared to be covered in an unknown oily substance. Contrary to earlier reports, there was no evidence of *Boerhavia tetrandia* growing on the island, and no sticky seeds were observed on any of the birds or on the island.

Boerhavia have been recorded on botanical surveys of Ducie up to and including 1991/92 (Fosberg *et al.* 1989; Florence *et al.* 1995), though it is present on Henderson Island (Paulay & Spencer 1989). Fosberg *et al.* (1989) listed only one plant species from Ducie, (*Heliotropum arboreum*) and suggested that storms had removed two previously recorded herbaceous species at some point in the 20th century. The cause of mortality observed in 1971 and 2024 is unknown and should be investigated on future visits.

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