

FIRST RECORD OF A COMMON DIVING PETREL *PELECANOIDES URINATRIX* FROM CONTINENTAL AFRICA, AND A SUMMARY OF DIVING PETREL DISTRIBUTION IN THE SOUTHERN OCEAN

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Received 07 July 2022, accepted 27 July 2022

ABSTRACT

RYAN, P.G., WARD, V.L. & MILLER, S.M. 2022. First record of a Common Diving Petrel *Pelecanoides urinatrix* from continental Africa, and a summary of diving petrel distribution in the Southern Ocean. *Marine Ornithology* 50: 211–214.

Tracking studies show that diving petrels regularly disperse thousands of kilometres from their colonies during the non-breeding season, yet there are relatively few vagrant records of diving petrels. We report the first record of a diving petrel from continental Africa. A Common Diving Petrel *Pelecanoides urinatrix* was found dead near Cape Town, South Africa, on 03 March 2021. It appeared to be from the sub-Antarctic subspecies *P. u. exsul*, which is supported by sightings at sea; *P. u. dacunhae* is not recorded away from Tristan da Cunha and Gough Islands. However, diving petrels are common ~1 500–2 000 km southwest of Cape Town in March, in an area where diving petrels from South Georgia winter. In April, diving petrels—presumably from colonies at islands in the southwest Indian Ocean—are common in Antarctic waters 2 100–2 600 km south of Africa and have been seen within 1 200 km of Africa. The Cape Town bird may have come from either of these populations. At-sea and tracking data show that diving petrels are widespread from ca. 45–60°S throughout the Southern Ocean, possibly excluding the southeast Pacific sector.

Key words: Cape Town, non-breeding distribution, dispersal

INTRODUCTION

Diving petrels *Pelecanoides* are highly modified petrels (Procellariidae) that are convergent with Northern Hemisphere auklets and murrelets (Alcidae). Traditionally, four species are recognised, but Fischer *et al.* (2018) described the New Zealand population of South Georgia Diving Petrel *P. georgicus* as a new species, the Whenua Hou Diving Petrel *P. [georgicus] whenuahouensis*. However, this species is only marginally distinct from the South Georgia Diving Petrel in terms of mitochondrial DNA sequences. There are greater differences among several populations of Common Diving Petrels *P. urinatrix* (Grosser *et al.* 2021), where up to six subspecies are recognised (Marchant & Higgins 1990, Onley & Schofield 2007, Harrison *et al.* 2021). Further study is needed to fully resolve the taxonomy of this challenging group.

Diving petrels breed at islands in the Southern Ocean as well as around South America, Australia, and New Zealand (Brooke 2004). Until recently, they were largely assumed to remain within a few hundred kilometres of their breeding colonies year-round (e.g., Brooke 2004, Shirihai 2007, Harrison *et al.* 2021). However, Cheral *et al.* (2006) reported that the stable isotope signatures in the feathers of Common Diving Petrels indicate that most birds from Iles Kerguelen disperse over a wide area, ranging from sub-tropical to Antarctic waters. Such large-scale movements have since been confirmed by geolocator tracking studies. Common Diving Petrels from South Georgia winter up to 2 500 km east in the central South Atlantic (Navarro *et al.* 2015), and those from colonies in northern New Zealand rapidly migrate up to 5 000 km southeast to the Antarctic Polar Front (APF) in the central South Pacific sector of the Southern Ocean (Rayner *et al.* 2017, Fromant *et al.* 2020). By

comparison, Common Diving Petrels from Kerguelen and southeast Australia winter up to 5 000 km west or southwest of their breeding islands (Fromant *et al.* 2020).

South Georgia Diving Petrels *P. georgicus* also disperse far from their colonies in winter (Rollinson *et al.* 2017). Those from South Georgia winter up to 2 500 km east in the central South Atlantic (Navarro *et al.* 2015) and from Kerguelen up to 4 500 km east to south of Australia (Fromant *et al.* 2022). However, Whenua Hou Diving Petrels from southern New Zealand disperse up to 5 000 km west-southwest to the APF in the eastern Indian Ocean sector (Fischer *et al.* 2021).

Despite these wide-ranging movements, there are surprisingly few records of diving petrels straying far from their breeding colonies. Common Diving Petrels have been recorded coming ashore from Western Australia to Queensland, and South Georgia Diving Petrels have been recorded from southeast Australia and the Falklands (Marchant & Higgins 1990). Vagrants of these species may have been overlooked in South America because of confusion with the locally breeding Magellanic *P. magellani* and Peruvian Diving Petrels *P. garnotii*. However, there are no modern records of diving petrels from continental Africa, although they probably bred near the Cape some five million years ago (Olson 1983).

On 03 March 2021, Pieter Diederichs found the carcass of a diving petrel on Milnerton Beach (33.88°S, 018.49°E), Cape Town, South Africa. The bird had started to decompose but was still intact (Fig. 1). It was not moulting and had the following measurements: wing 122 mm (flattened chord), tarsus 25.9 mm, total head length 52.6 mm, culmen 16.8 mm (feathering to tip), bill width at the base

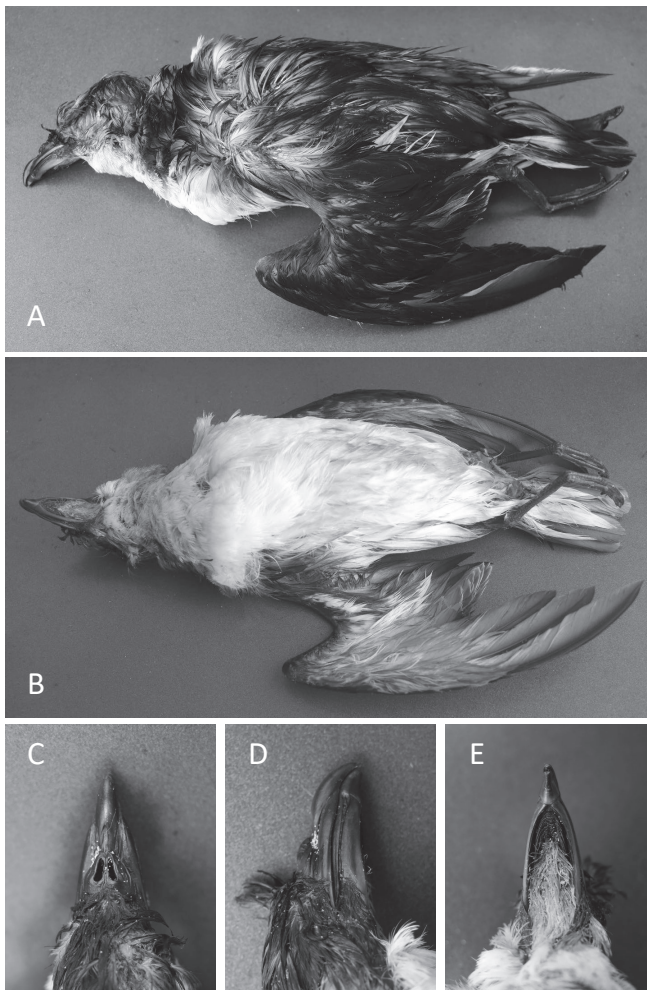


Fig. 1. The Common Diving Petrel *Pelecanoides urinatrix* found dead near Cape Town, South Africa, on 03 March 2021: (A) dorsal, (B) ventral, and bill from (C) above, (D) side, and (E) underneath.

9.8 mm, and bill depth 9.0 mm at the base, 6.1 mm in front of the nostrils, and 6.6 mm at the gonys. The bird was frozen and later sampled for DNA from muscle tissue and flight feathers. DNA was extracted with a Quick-DNA™ Miniprep Plus kit (Zymo Research, Irvine, California), but unfortunately the resulting DNA was too degraded (~100 base pairs) to allow any sequencing.

The carcass was identified as a Common Diving Petrel based on its relatively long, stout bill with approximately parallel rami when viewed from below (Fig. 1E), and its rather dark plumage, which included dark inner primaries (Marchant & Higgins 1990, Onley & Schofield 2007, Harrison *et al.* 2021). The shape of the nostrils was consistent with Common Diving Petrel, and although the paraseptal processes were missing, their bases were just visible close to the skull (not in the middle of the nostrils as in South Georgia, Magellanic, and Peruvian Diving Petrels; Fig. 1C). Supporting this identification was the seemingly uniform leg colour of the carcass. Although the leg was dried out and dull grey, rather than the blue of live birds, there was no evidence of a darker line along the back of the tarsus as is typical of South Georgia Diving Petrel (Onley & Schofield 2007). Johannes Fischer (*in litt.*) suggested that the bird was *P. u. exsul* based on its somewhat triangular bill shape.

In the African sector of the Southern Ocean, *P. u. dacunhae* breeds at uninhabited islands in the Tristan da Cunha archipelago and at Gough Island in the central South Atlantic Ocean, whereas *P. u. exsul* breeds together with South Georgia Diving Petrels at the Prince Edward, Crozet, Kerguelen, and Heard island groups in the southwest Indian Ocean, as well as at South Georgia (Shirihai 2007, Harrison *et al.* 2021; Fig. 2). Observations at sea show that the closest records to Africa are about 1 100 km southwest (40.8°S, 009.1°E on 10 December 1983; D.G. Ainley unpubl. data) and 1 200 km southeast (43.4°S, 032.2°E, 580 km northwest of the Prince Edward Islands on 05 April 2014; PGR unpubl. data; Fig. 2). There are no records away from Tristan and Gough, an indication that Common Diving Petrels are sedentary at these northern breeding colonies where they are common offshore during the winter non-breeding period (Ryan & Oppel 2022).

Roport-Coudert *et al.* (2014) indicate that diving petrels are widespread south of the APF in the Indian and southwest Atlantic sectors of the Southern Ocean. They appear to be generally scarce in the Pacific Ocean sector (but see Szijj 1967, Rayner *et al.* 2017, Fromant *et al.* 2020) and in the central and southeast Atlantic sector. Southwest of Africa, diving petrels were only commonly recorded during one transect between the South Sandwich Islands and Cape Town in early December 1983 (D.G. Ainley unpubl. data). However, subsequent observations recorded numerous birds northeast of Bouvet (Fig. 2). This included records from both summer (December–March) and winter (July; AS@S 2022a, 2022b). During a transect from South Georgia to Cape Town via the South Sandwich Islands and Bouvet in March 2016 (Ryan *et al.* 2020), 36 diving petrels were seen 400–600 km northeast of Bouvet (51.2–49.7°S, 006.8–008.3°E) on 14 March, and a further four diving petrels were seen 830–1 060 km northeast of Bouvet (48.2–46.6°S, 010.0–012.0°E) on 15 March. The only other diving petrels seen away from South Georgia during this transect were three diving petrels 150–250 km east of South Thule, the southernmost South Sandwich Island, on 08 March (59.5°S, 024.9–022.9°W).

Diving petrels are notoriously difficult to identify at sea, and although several birds were photographed northeast of Bouvet, they could not be reliably identified. Both specimens found aboard ships in this area have been South Georgia Diving Petrels: Rollinson *et al.* (2017) reported one at 44°S, 007°E, approximately 1 500 km southwest of Cape Town on 25 July 2016; and a second strike occurred slightly farther north at 43.0°S, 008.5°E on 03 August 2019 (VLW unpubl. data). However, Navarro *et al.* (2015) tracked overwintering Common and South Georgia Diving Petrels in the area northeast of Bouvet (Fig. 2), so both species are likely to occur in this region.

Based on our observations, waters northeast of Bouvet are an important non-breeding area for diving petrels. Common Diving Petrels finish breeding on South Georgia at the end of February (Fromant *et al.* 2020), and the vagrant to Cape Town may represent a bird that overshot this area during its post-breeding migration. Alternatively, this bird could be a vagrant from colonies on sub-Antarctic islands in the southwest Indian Ocean. Based on observations around the Prince Edward Islands in April 2014, most diving petrels disperse south into waters south of the APF, but at least some disperse north to areas around the Subtropical Convergence at 43°S (Fig. 2). This pattern is consistent with the

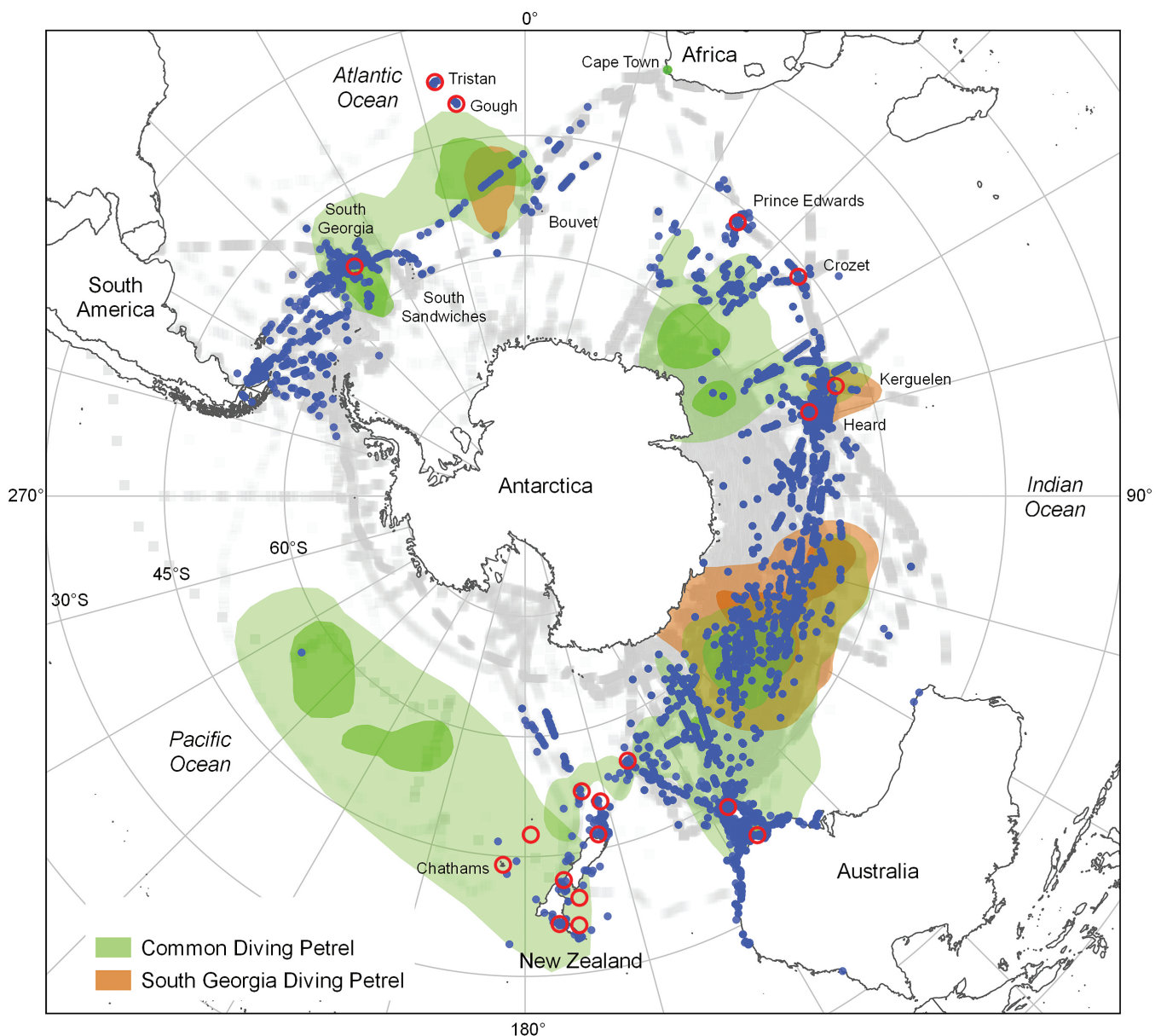


Fig. 2. Records of diving petrels at sea in relation to breeding colonies of Common *Pelecanoides urinatrix* and South Georgia *P. georgicus* Diving Petrels (red circles), and relative to Cape Town, South Africa, where the first African specimen was collected. Blue dots indicate diving petrels and grey dots indicate observation locations with no diving petrels (from Szijj 1967; Ropert-Coudert *et al.* 2014; AS@S 2022a, 2022b; the Ocean Biodiversity Information System; and unpublished data). Shaded areas indicate the ranges of geolocator-tracked Common and South Georgia Diving Petrels from South Georgia (Navarro *et al.* 2015) and Kerguelen (Fromant *et al.* 2020, 2022), and Common Diving Petrels from southeastern Australia and New Zealand (Rayner *et al.* 2017, Fromant *et al.* 2020); darker shading indicates core wintering areas. See Fischer *et al.* (2021) for the non-breeding ranges of Whenua Hou Diving Petrels *P. [georgicus] whenuahouensis* from southern New Zealand, a range that largely overlaps with Common Diving Petrels from southeastern Australia.

wide range of feather stable isotope signals recorded from Common Diving Petrels breeding at Kerguelen (Cherel *et al.* 2006).

Collating observations of diving petrels at sea (excluding Humboldt and Magellanic diving petrels off South America) with tracking data of non-breeding adults indicates that diving petrels are widespread throughout the Southern Ocean, with the possible exception of the southeast Pacific sector (Fig. 2). They appear to be distributed farther south in the Indian Ocean sector than in either the Atlantic or southwest Pacific sector (Fig. 2; Fromant *et al.* 2020, 2022).

ACKNOWLEDGEMENTS

We thank Johannes Fischer, Peter Harrison, and Alan Tennyson for extremely helpful comments on the identification of the specimen from photographs. Joan Navarro and Richard Phillips kindly shared tracking data for diving petrels from South Georgia, and Aymeric Fromant shared shapefiles of birds tracked from Kerguelen, southeastern Australia, and New Zealand. David Ainley, Richard Phillips, Ben Raymond, Yan Ropert-Coudert, and Anton van de Putte provided data on seabirds at sea. We thank our colleagues

on various research cruises, including the Antarctic Circumpolar Expedition on the *Akademik Tryoshnikov* and the July 2019 winter cruise of the *SA Agulhas II*. We also thank the two anonymous reviewers who provided useful comments on our paper.

AUTHORS' CONTRIBUTION

PGR: investigation, data analysis, writing (original draft). VLW: investigation, writing (review & editing). SMM: data analysis, writing (review & editing).

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