Records of rare birds in the Indian Ocean during the austral summers of 2003–05

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On 2 January 2003 RRV and KDH left Réunion aboard the *R/V Marion Dufresne*, stopped at Île de la Possession (Crozet archipelago) and Grand Terre (Kerguelen archipelago), St Paul and Amsterdam Island, and arrived at Fremantle, Australia on 22 January. In 2004, RRV and M-CM left Réunion on 3 January, stopped at Mauritius, Mayotte, Île de la Possession, and Kerguelen and then, together with KDH, returned to La Réunion on 10 February. In 2005, RRV and M-CM left La Réunion on 12 January and returned, after spending five weeks near Kerguelen, on 22 February (Fig. 1). The following observations appear to be of particular interest.

JUAN FERNÁNDEZ PETREL *Pterodroma externa*

We saw one Juan Fernández Petrel in 2003 and three in 2004, the first records of this south-temperate Pacific species for the Indian Ocean, though the closely related White-necked Petrel *P. cervicalis* has been recorded north of the Crozets (Shirihai 2003). Juan Fernández Petrels breed only at Alexander Selkirk Island, Juan Fernández archipelago (33°S, 81°W), and disperse into the Pacific between 20°N and 50°S, west to *c.*160°W. There are records of vagrants from Australia, New

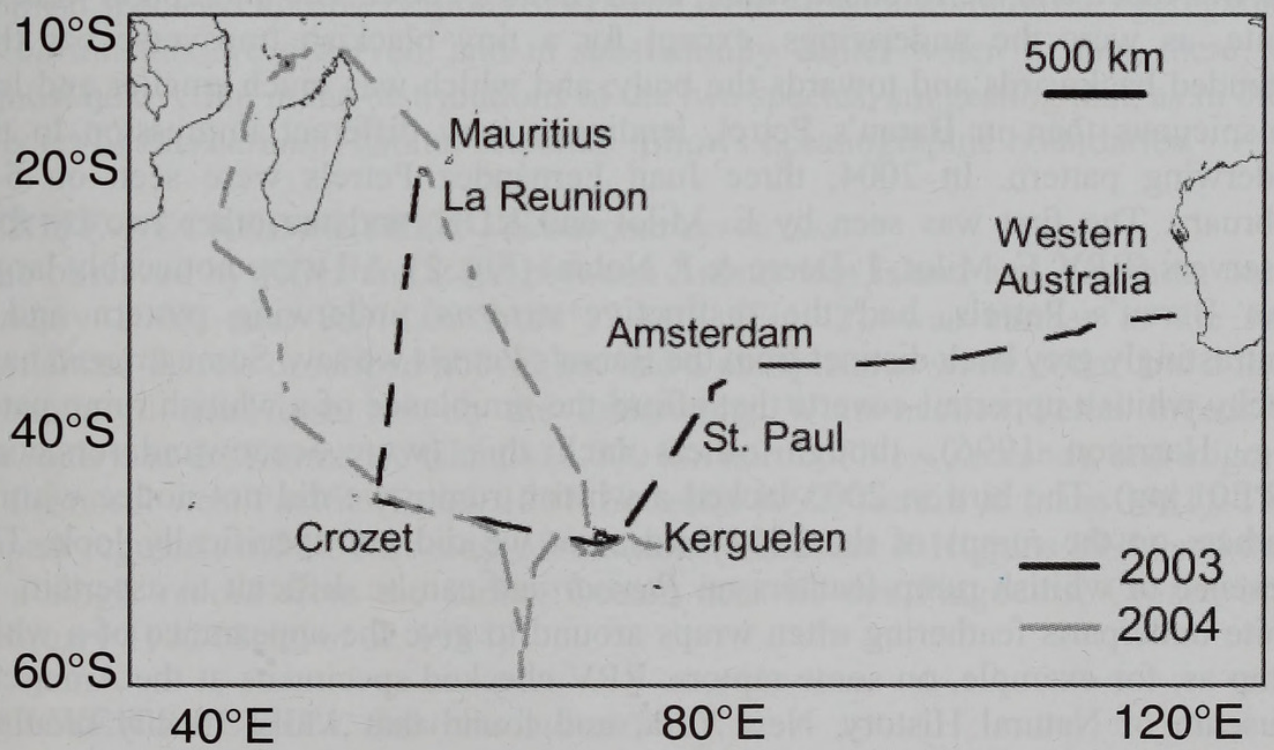

Figure 1. Map of the Indian Ocean, showing the areas surveyed in 2003 (2–22 January, black) and 2004 (3 January–10 February, grey), and the islands visited.

Zealand and the South Atlantic (Falla *et al.* 1981, Brooke 1987, Harrison 1990, Marchant & Higgins 1990, Shirihai 2003) including individuals prospecting ashore at the Chathams, New Zealand and New South Wales, Australia (Marchant & Higgins 1990, Imber *et al.* 1991), suggesting that vagrants at sea have been overlooked.

Juan Fernández Petrel is a distinctive species, likely to be confused mainly with Barau's Petrel *Pterodroma baraui*, which nests on La Réunion and Rodríguez, and disperses in tropical waters around these archipelagos and south to the Subtropical Convergence (Stahl & Bartle 1991, Jacquemet *et al.* 2004). Because on both our cruises we saw *c.*200 Barau's Petrels, we noticed several features that distinguish them from the larger and heavier Juan Fernández Petrel (Harrison 1987, 1996). Other species with which *P. externa* could be confused include *P. cahow* of Bermuda, *P. hasitata* of the Caribbean, *P. sandwichensis* of Hawaii and *P. phaeopygia* of the Galápagos. *Cahow* and *hasitata* can be quickly eliminated by the broad transverse bar on the underwing, heavier than on *baraui*, whilst *sandwichensis* and *phaeopygia* are much darker dorsally than either *externa* or *baraui*, have more extensive dark hoods that extend onto the neck-sides and more prominent transverse bars on the underwing.

The 2003 Juan Fernández Petrel was observed by RRV alone, at 12.15 h on 7 January, near 38°48.36'S, 52°58.8'E. It was with a Great Shearwater *Puffinus gravis* and approached to *c.*30 m of the ship during the 3–4-minute observation. The bird was about the same size as the Great Shearwater with a very heavy bill, similar to that of Great-winged Petrel *Pterodroma macroptera*, which was common in the area. The back and upperparts were uniformly dark gray, including the rump. The cap was black and the forehead white, as in Barau's Petrel. The underparts were all white, as were the underwings, except for a tiny blackish transverse bar that extended backwards and towards the body, and which was much smaller and less conspicuous than in Barau's Petrel, lending a very different impression to the underwing pattern. In 2004, three Juan Fernández Petrels were seen on 5–7 February. The first was seen by E. Milot and KDH, and the other two by four observers (RRV, E. Milot, J. Deere & P. Nolan) (Fig. 2). All were noticeably larger than Barau's Petrels, had the distinctive *externa* underwing pattern and a contrastingly grey back distinct from the Barau's Petrels we saw. Some *externa* have patchy whitish uppertail-coverts that afford the semblance of a whitish rump patch (e.g. Harrison 1996), though others lack this (www.oceanwanderers.com/JFPE01.jpg). The bird in 2003 lacked a whitish rump; we did not notice whitish feathers on the rumps of the 2004 birds, but we did not specifically look. The presence of whitish rump feathers on *Pterodroma* can be difficult to ascertain, as white underparts feathering often wraps around to give the appearance of a white rump as, for example, on some raptors. RRV checked specimens at the American Museum of Natural History, New York, and found that whilst freshly moulted Barau's Petrels in September have grey backs, as do recently fledged juveniles in March–May, worn birds in January–February appear uniformly dark above.

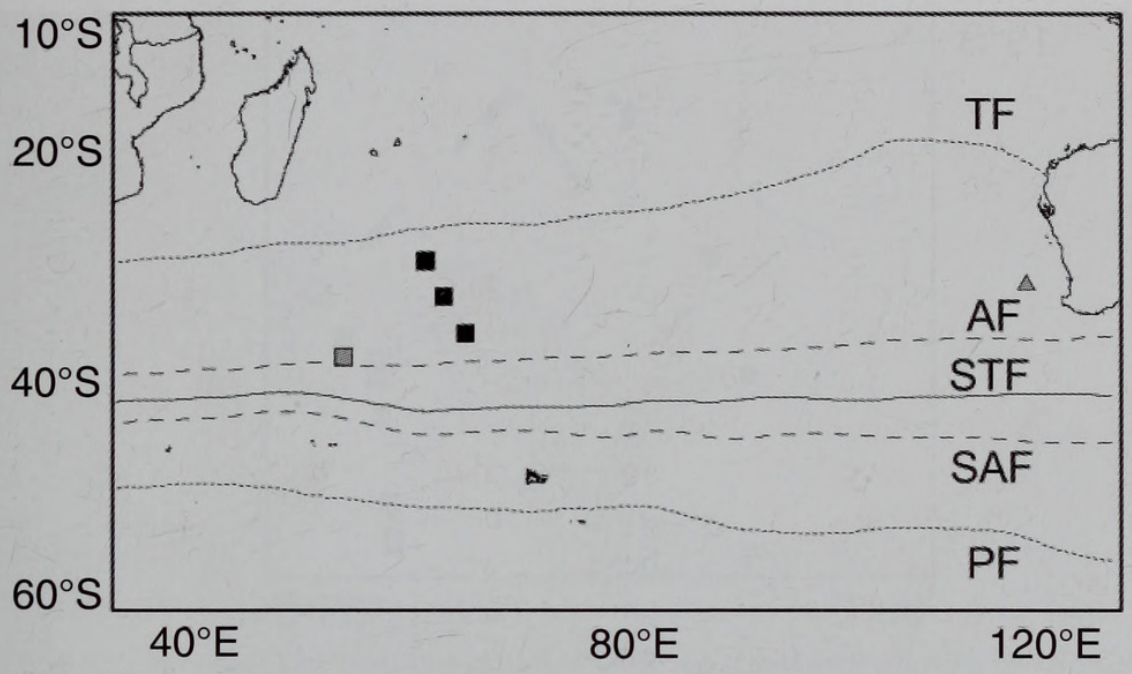

Figure 2. Distribution of Juan Fernández Petrels *Pterodroma externa* (squares) and White-necked Petrels *P. cervicalis* (triangle) in 2003 (grey) and 2004 (black), superimposed over the major frontal systems in the region, defined in terms of sea surface temperature (SST) characteristics: Tropical Front (TF, 25°C), Agulhas Front (AF, 17°C), Subtropical Front (STF, 13°C), Subantarctic Front (SAF, 10°C) and Polar Front (PF, 4°C). SST data are a composite for the survey period, obtained by averaging nine concurrent weekly composites of the Reynolds Optimally Interpolated dataset (PODAAC product 19) based on a combination of AVHRR satellite and in situ data, with a spatial resolution of 1 × 1 degree (http://poet.jpl.nasa.gov/).

Juan Fernández Petrel has a subtropical distribution, whereas Barau's Petrel is a tropical species. Our observations of *externa* were all well south of the aggregations of *baraui* that we observed, and in substantially cooler water. In fact, there was almost no overlap in the distributions of the two species, suggesting that, as in other species of *Pterodroma*, habitat selection follows oceanographic boundaries.

WHITE-NECKED PETREL *Pterodroma cervicalis*

One observed by KDH and RRV between Amsterdam Island and Australia, on 21 January 2003, near 32°18.09'S, 11°57.84'E (Fig. 2), was similar to the Juan Fernández Petrels described above, but had a conspicuous white collar and a more pronounced transverse bar on the underwing. White-necked Petrel breeds on Macauley, in the Kermadec Islands (1,000 km north of New Zealand), and migrates to the north-west Pacific (Brazil 1991, Bregulla 1992, Tanaka & Inaba 1981). They appear regularly off the east coast of Australia (Marchant & Higgins 1990) and there is a single record from the Indian Ocean, near Île des Pingouins, Crozet, on 8 February 1982 (Stahl *et al.* 1984).

BULWER'S PETREL *Bulweria bulweria*

On 4–5 January 2003, we recorded 12 between 22°20.28'S, 54°59.16'E and 29°59.16'S, 54°05.52'E, *c.*800 km south of La Réunion. We saw an additional five

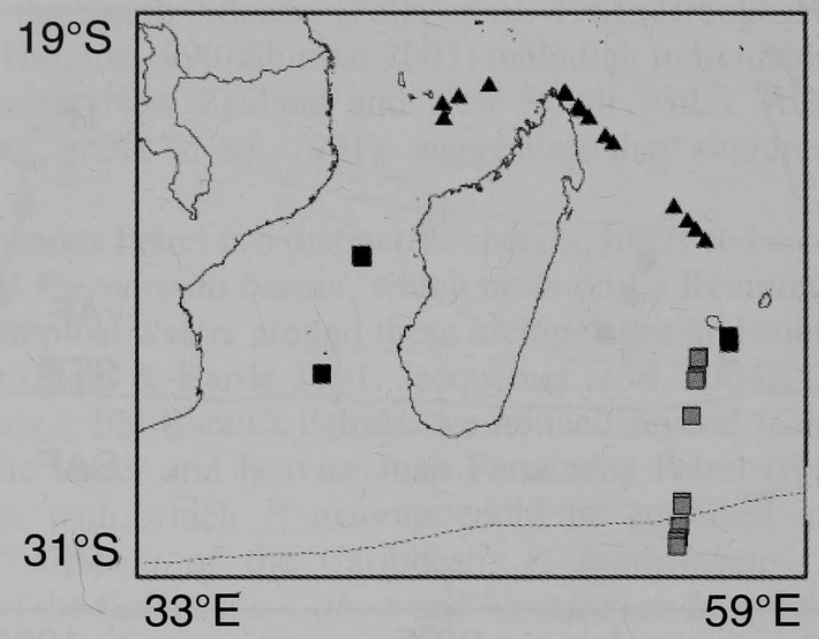

Figure 3. Distribution of Bulwer's Petrels *Bulweria bulweria* (squares) and Jouanin's Petrels *B. fallax* (triangles) in 2003 (grey) and 2004 (black). The hatched line indicates the mean location of the Tropical Front (SST: 25°C). SST data are a composite for the survey period, obtained by averaging nine concurrent weekly composites of the Reynolds Optimally Interpolated dataset (PODAAC product 19) based on a combination of AVHRR satellite and in situ data, with a spatial resolution of 1 × 1 degree (http://poet.jpl.nasa.gov/).

in 2004: three between Île Europa (22°S, 40°E; west of southern Madagascar) and 30°S, on 14–15 January, and two more south of La Réunion on 9 February (Fig. 3). Marchant & Higgins (1990) show no records west of Madagascar (though it is known from this region: Ryan *et al.* 2006), and suggest that the southern extent of their range is near 25°S, south of La Réunion. The sightings above extend the pelagic range south and west by *c.*400–700 km (Harrison 1987, 1996).

JOUANIN'S PETREL *Bulweria fallax*

We observed 21 between Mauritius and Mayotte on 5–9 January 2004 (Fig. 3). The northernmost was near 11°48.04'S, 46°46.01'E), *c.*1,200 km north of Mauritius. All were in tropical waters, characterised by sea surface temperatures above 25°C.

AUSTRALASIAN GANNET *Morus serrator*

A pair at a nest on St Paul Island (38°41'S, 77°33'E), on 16 January 2003. Both this species and Cape Gannet *M. capensis* have been recorded intermittently at St Paul since 1986 (LeQuette *et al.* 1995). Nests with eggs of both species have been found, but it is unknown whether either taxon has successfully fledged young.

PECTORAL SANDPIPER *Calidris melanotos*

One found, by B. Gangloff and F. Dulac, on a small pond in the south-east Courbet Peninsula, Kerguelen, on 4 February 2005. Photographs clearly eliminate the similar Sharp-tailed Sandpiper *C. acuminata* (Fig. 4). Previously recorded at the Prince Edwards (Shirihai 2003), in Seychelles (Feare 1979) and on islands off

Figure 4. Pectoral Sandpiper *Calidris melanotos*, Courbet Peninsula, Kerguelen, 4 February 2005 (F. Dulac)

Madagascar (Sinclair & Langrand 2003), but away from Madagascar the species has been seen fewer than five times in the Indian Ocean and never before on Kerguelen.

LONG-TAILED JAEGER *Stercorarius longicaudus*

Long-tailed Jaegers breed in the arctic and winter in temperate portions of the Southern Ocean, especially in areas of high oceanic productivity (Lambert 1971, 1980, Veit 1984). Published range maps (e.g. Harrison 1996) indicate that the species does not occur in the Indian Ocean, though Shirihai (2003) noted that they are 'also common off southeast coast of Africa north to at least S Mozambique' and Hockey *et al.* (2005) indicated regular occurrence in the western Indian Ocean. Thus, whilst there appears to be strong evidence that the species occurs along the western margin of the Indian Ocean, we report the first Indian Ocean records away from the African coast and Mozambique Channel (Ryan *et al.* 2006). The species is probably overlooked, given its resemblance both to other jaegers and to Sooty *Sterna fuscata* and Bridled Terns *S. anaethetus*.

In all years combined (2003–05) we saw *c.*70 Long-tailed Jaegers (Fig. 5), identified by their shape (long narrow wings, long and narrow tail apart from the central streamers), contrast between blackish remiges and grey upperwing-coverts, the limited number of white primary shafts (never more than two, and on many birds none was visible) and, on some birds, by the elongated, narrow and pointed central rectrices (Harrison 1987, 1996).

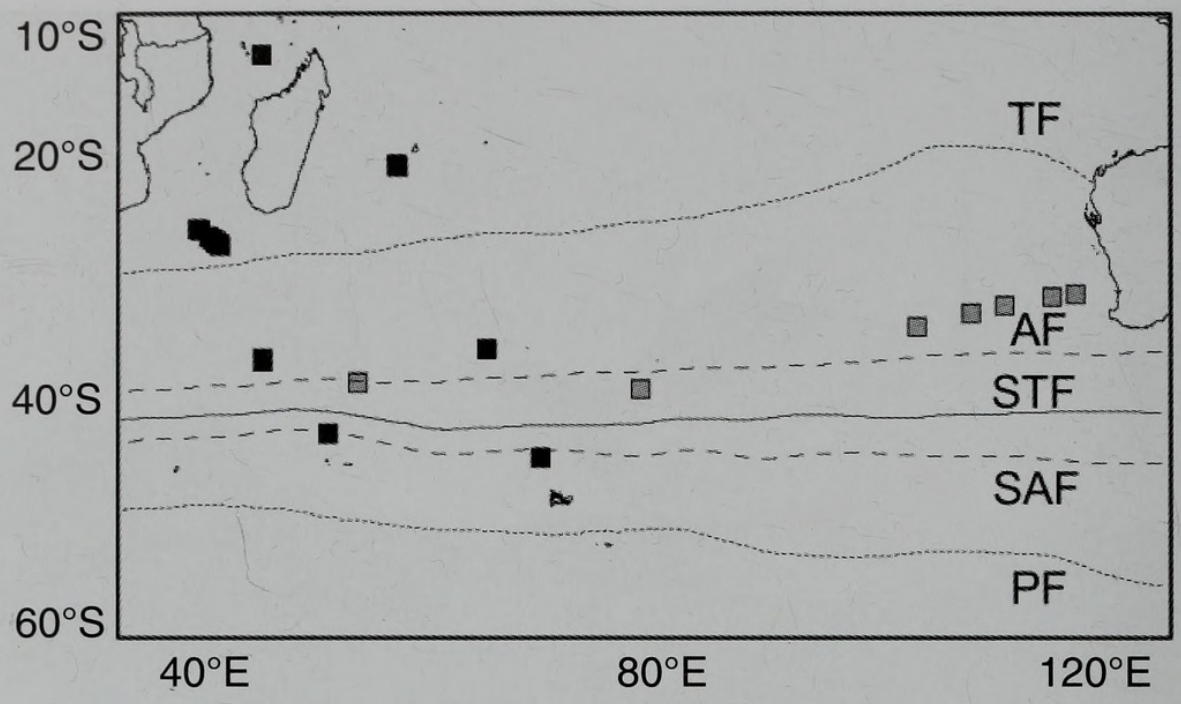

Figure 5. Distribution of Long-tailed Jaeger *Stercorarius longicaudus* sightings in 2003 (grey) and 2004 (black), superimposed over the major frontal systems in the region, defined in terms of sea surface temperature (SST) characteristics: Tropical Front (TF, 25°C), Agulhas Front (AF, 17°C), Subtropical Front (STF, 13°C), Subantarctic Front (SAF, 10°C) and Polar Front (PF, 4°C). SST data are a composite for the survey period, obtained by averaging nine concurrent weekly composites of the Reynolds Optimally Interpolated dataset (PODAAC product 19) based on a combination of AVHRR satellite and in situ data, with a spatial resolution of 1 × 1 degree (http://poet.jpl.nasa.gov/)

As off Africa (Lambert 1971, 1980, Ryan 1989) and South America (Veit 1984), the Long-tailed Jaegers we observed were concentrated over oceanic regions of steep physical gradients. The species was mostly associated with the Subtropical Convergence, and the confluence of the Subtropical and Subantarctic convergences north of the Crozets. Previously, Stahl *et al.* (1984) reported 23 jaeger sightings between Réunion and the Subantarctic Front in late spring / early summer (7 December–10 March), of which 15 were identified to species and one, seen halfway between Réunion and Crozet (35°S, 50°E), was a Long-tailed Jaeger. The species has also been recorded in the Benguela Current (Abrams 1983, Lambert 1980), in the Agulhas Retroflection south of South Africa (Ryan 1989), and in Subtropical Zone waters in the African sector of the Indian Ocean (15°W–35°E, 35–70°S) (Abrams 1985).

SOOTY TERN *Sterna fuscata*

We saw an adult from the *Marion Dufresne* whilst anchored off the north side of St Paul, on 16 January 2003. Sooty Tern apparently bred at St Paul in the past (Segonzac 1972) but was extirpated by rats. There are no recent breeding records.

LESSER CRESTED TERN *Sterna bengalensis*

One feeding with *c.*40 Common Terns *S. hirundo* in Port Louis harbour, Mauritius, on 5 January 2004 (RRV). There are three previous records from Mauritius, the most

recent in 1991 (see Safford & Basque 2007). According to Harrison (1987, 1996) the species does not ordinarily occur south of northern Madagascar, but does so regularly in the Cape region of South Africa (Hockey *et al.* 2005).

Acknowledgements

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Taxonomy of *Chlorospingus ophthalmicus* in Mexico and northern Central America

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Despite a broad latitudinal distribution, Neotropical humid montane forests ('cloud forests') are fragmented because they require specific environmental conditions, especially high humidity and altitude. Therefore, they occur in areas with steep slopes and high moisture input from clouds and mist (Brown & Kappelle 1995, Webster 1995). In Mesoamerica, cloud forests are highly fragmented, whereas in South America they constitute a more continuous band stretching 3,000 km through the Andes. Such characteristics make cloud forests intriguing (Foster 2001): this biome has witnessed the evolution of astonishing biological diversity, with large numbers of endemic taxa, many of them highly range-restricted (Fjeldså & Krabbe 1990, Gentry 1995, Hernández-Baños *et al.* 1995, Campbell 1999, Navarro *et al.* 2001). This diversity has been explained via hypotheses of how past climatic change affected cloud forests, provoking vertical and horizontal movements of different