

## Status of the Westland petrel (*Procellaria westlandica*) off South America

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**Abstract** The presence of small numbers of Westland petrels (*Procellaria westlandica*) off the east and west coasts of South America is a relatively recent discovery. Evidence for the presence of the species in those seas has, however, been found to extend back at least as far as 1913, with the reidentification of a specimen in the American Museum of Natural History collection as *P. westlandica*. Preliminary comments are given on the condition of plumage of Westland/etrels observed in South American waters.

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### INTRODUCTION

The Westland petrel (*Procellaria westlandica*) is a large, all-dark petrel that breeds only in the forested hills on the West Coast, South Island, New Zealand. Its distribution at sea is generally reported as "E to central Pacific. ... and possibly to S. American waters" (Marchant & Higgins 1990). Recent published records (Whitney & Stejskal 1992; Pearman 1994; Howell & Webb 1998; Cook 1998) suggest that this species regularly visits the waters off southern South America. Howell (1996) considered the species an uncommon non-breeding visitor off central and southern Chile. Here we provide recent field data to support and expand upon that evaluation of status, as well as details of a previously overlooked specimen of Westland petrel from Chile.

### METHODS AND RESULTS

While examining specimens at the American Museum of Natural History (AMNH), New York, in December 1995, ESB noted a specimen (AMNH 444568) labelled white-chinned petrel (*Procellaria aequinoctialis*) but which appeared to be a Westland petrel (*P. westlandica*). Comparison with other specimens supported this conclusion. SNGH examined the specimen in October 1997 and concurred. The specimen was collected on 21 November 1913 by Rollo H. Beck and is labeled "Valparaiso, Chile." Additional data from the label are: "Original number 1867; iris brown; bill yellowish and black; feet black; sexual organs small." SNGH's measurements include wing chord (unstraightened) 375 mm and bill (exposed culmen) 50.0 mm. The specimen is blackish brown overall, including the chin. The bill pattern, pale basally with blackish unguis (especially the

superior unguicorn), is typical of Westland petrel and rules out white-chinned petrel, while the bird is larger than the otherwise similar black petrel (*P. parkinsoni*). Straightened wing chord and bill of black petrel are 326–359 mm and 39–45.1 mm, respectively, whilst those of Westland petrel are 362–400 mm and 46.6–49.2 mm for skins at the Museum of New Zealand Te Papa Tongarewa (Marchant & Higgins 1990). Baker & Coleman (1977) found bill measurements of breeders to be  $50.4 \pm 2.05$  mm and of non-breeders  $49.3 \pm 2.08$  mm (standard deviations from Marchant & Higgins 1990).

The AMNH specimen of Westland petrel may be the basis of Murphy's (1936) comments that "the white on the chin [of white-chinned petrels] is clearly without geographic significance," to wit: "For example, Beck's birds taken off Valparaiso, during November, 1913, include one specimen with no white whatsoever on the chin." This presumably refers to AMNH 445686, as it is the only specimen in the collection that corresponds to that description.

Other authors (Falla 1937; Warham & Bell 1979; Warham 1996) also note that white-chinned petrels from all populations may lack white chins, and that dark-chinned birds may outnumber white-chinned birds in New Zealand colonies (Marchant & Higgins 1990). It is not known whether this difference constitutes a distinct morph or is related to age or sex. Ainley & Spear (unpubl. data) have collected 11 white-chinned petrels of the nominate form off southern Peru in the austral winter, all of which had very little white plumage (only a few feathers) in the interramal space. All 11 birds were subadults, based on gonad size in males and nonconvoluted oviducts in females, so that the amount of white in the "chin" may be an age-related feature in this subspecies.

Although the Westland petrel's population may have increased 4-fold in the past 30 years (Marchant & Higgins 1990), we suspect that observers newly aware of the characters separating *Procellaria* petrels are also responsible for the dramatic increase in records from waters off southern South America. Identification of petrels in this genus has been elucidated only in recent years (Harrison 1987, 1997; Marchant & Higgins 1990; Heather & Robertson 1997), although older references (e.g., Harper & Kinsky 1974) cover white-chinned and Westland petrels well.

Distinguishing Westland from black petrels has received considerable attention but generally comes down to a difference in size (e.g., Marchant & Higgins 1990;

Heather & Robertson 1997). Thus, distinguishing the two at sea is problematical unless other species of known identity are present for comparison. Almost all of our records (Table 1) involved birds seen with the more numerous white-chinned petrel, as well as with or near other familiar and widespread species such as sooty shearwaters (*Puffinus griseus*). Westland petrels have appeared much larger than sooty shearwaters and essentially the same size as white-chinned petrels and could not be separated confidently from the latter species by shape, size, or flight characters. By contrast, the very similar black petrel is markedly smaller, more similar in size to a large shearwater, and thus intermediate in size between sooty shearwater and the much larger white-chinned petrel. As far as is known, the non-breeding range of black petrels extends over warmer waters off the American west coast from southern Mexico to Peru (Marchant & Higgins 1990; Pitman & Ballance 1993).

For most of the Westland petrels we have observed at sea, data on primary moult was recorded. Birds in active wing moult were observed between 5 November (2 moulting inner and middle primaries; 1 moulting middle and outer primaries) and 4 February (heavy wing moult). Birds seen in August and early September had not yet started to moult their primaries, but all showed contrasting pale brown panels on the inner greater upperwing coverts, which were often striking in flight and also noticeable when the birds were sitting on the water. Five birds seen in early December and 2 in early March showed no signs of moult and appeared to be in fresh plumage, so it is likely that remiges are moulted at least from October to February in birds off South America. Adults reportedly replace their flight feathers between December and March, and birds moulting flight feathers in September have been considered to be non-breeding subadults (Marchant & Higgins 1990). Our moult data suggest that different age classes may be present off South America, with immatures perhaps moulting earlier than adults.

#### *Field identification*

SNGH and MPF found differences in moult and wear to be useful for separating Westland petrels from white-chinned petrels. Because differential moult times have been noted as supporting identification characters for other petrels (Spear *et al.* 1992), we discuss our related observations here. Pale upperwing panels (August to September) or active primary moult (November to December) were evident on all but 1 of 15–20 Westland

**Table 1** Locations and dates of sightings of Westland petrels (*Procellaria westlandica*) off South America through March 1998, arranged by *season*. Previously published records indicated by referencing.

Date	No.	Location	Attribution
7 Aug 1995	1	41°20'S 74°11'W (31 km offshore between Valdivia and Ancud, Chile)	SNGH, SW
27 Aug 1996	2	c. 15 km off Arica, Chile	SNGH, SW
9 Sep 1997	6-10	Off Valparaiso, Chile	SNGH, SW
3 Nov 1996	1	40° 05' S, 74° 05' W, west-southwest of Valdivia, Chile (Cook 1998)	S. Cook
5 Nov 1996	3-4	Off Valparaiso, Chile	SNGH
8 Nov 1994	2	c. 15 km west of Valparaiso, Chile (Howell & Webb 1995)	SNGH
24 Nov 1996	1	15 km south of western end of Bahía Aguirre, on south coast of Península Mitre, near eastern end of Isla Grande, Argentina, 55° 06.66' S, 65° 59.29' W	DWF, SG, ST
29 Nov 1990	2	Beagle Channel, east of Ushuaia, Argentina (Whitney & Stejskal 1992)	D. Stejskal, B. Whitney
2 Dec 1993	1	c. 15 km west of Valparaiso, Chile (Howell & Webb 1995)	SNGH, SW
2 Dec 1995	1-2	Eastern edge of Burdwood Bank, c 210 km east of Islas de los Estados, Argentina	ESB, ST
3 Dec 1994	3	East of mouth of Beagle Channel, Argentina: 55° 04' S, 66° 02' W; 55° 00' S, 65° 15' W; 54° 24' S, 64° 28' W (Howell & Webb 1995)	SNGH
8 Dec 1991	4	Between Isla de Chiloé and Puerto Aisén, Chile, c. 43° 30' S, 74° 00' W to 45° 20' S, 73° 00' W (of some 150+ <i>Procellaria</i> ) (Pearman 1994)	P. Hayman, G. Riley
12 Dec 1995	4	5-10 km, south of eastern end of Cabo de Hornos	ESB, ST
16 Dec 1992	340	c. 54° 54' S, 63° 54' W, southeast of Isla de los Estados, Argentina, to c. 55° 06' S, 66° 32' W (many photographed; C. Benesh <i>in .itt.</i> )	C. Benesh, R. Q. Randal
24 Dec 1993	4	Central South Pacific, 48° 55.0' S, 141° 57.0' W	MPF
27 Dec 1992	1	21° 18' S, 74° 17' W	LBS, DGA
27 Dec 1992	1	28° 13' S, 72° 45' W	LBS, DGA
28 Dec 1994	1	20° 52.0' S, 80° 56.6' W	MPF
28 Dec 1994	1	19° 39' S, 81° 42' W	LBS, DGA
29 Dec 1992	1	30° 51' S, 72° 09' W	LBS, DGA
30 Dec 1994	2	c. 35 nm southwest of Cabo Tablas, north of Valparaiso, Chile	MPF
30 Dec 1994	1	32° 00' S, 72° 41' W	LBS, DGA
Early Jan 1994	+	"Large numbers" at the mouth of the Beagle Channel, Argentina and Chile	C.Field, C.Field
1 Jan 1998	11	Eastern end of the Straits of Magellan	MPF
3 Jan 1995	2	Coastal waters south of Valparaiso, Chile	MPF
3 Jan 1995	1	33° 05' S, 72° 10' W	LBS, DGA
5 Jan 1995	5	Canal Moraleda, Aisén, Chile, 44° 21.6' S, 73° 26.2' W	MPF
6 Jan 1994	9	Eastern side Isla Grande de Tierra del Fuego, Argentina	MPF
11 Jan 1995	2	South Atlantic, near eastern entrance Straits of Magellan, 52° 27.0' S, 68° 42.9' W	MPF
11 Jan 1995	1	South Atlantic, near eastern entrance Straits of Magellan	MPF
13 Jan 1994	4	Eastern side Isla Grande de Tierra del Fuego, Argentina	MPF
19 Jan 1996	7	Eastern side Isla Grande de Tierra del Fuego, Argentina	MPF
4 Feb 1995	1	Eastern side Isla Grande de Tierra del Fuego, Argentina, 53° 19.3' S, 66° 23.7' W	MPF
14 Feb 1996	2	Cabo de Hornos, Islas Wollaston, 56° 19.3' S, 66° 48.9' S	MPF
20 Feb 1996	2	Eastern side Isla Grande de Tierra del Fuego, Argentina	MPF
3 Mar 1995	1	South of Cabo San Diego, Isla Grande de Tierra del Fuego, Argentina, 54° 41.3' S, 64° 56.5' W	MPF
3 Mar 1995	1	South of Cabo San Diego, Isla Grande de Tierra del Fuego, Argentina, 54° 10.4' S, 65° 39.0' W	MPF
4 Mar 1998	10	54° 35.2' S, 64° 52.1' W to 53° 59.8' S, 65° 53.9' W (all of single birds except 4 at 54° 23.8' S, 65° 12.0' W), vicinity of Estrecho de le Maire and eastern side of Isla Grande de Tierra del Fuego, Argentina	MPF
13 Mar 1998	1	55° 00' S, 65° 22' W, 5 nm north of Bahía Valentin, Islas de los Estados, Argentina	ST
16 Mar 1996	1	Eastern side Isla Grande de Tierra del Fuego and Estrecho de le Maire, Argentina	MPF
19 Mar 1994	1	50° 43' S, 74° 32' W	LBS, DGA
20 Mar 1994	2	45° 09' S, 73° 39' W	LBS, DGA
20 Mar 1994	2	44° 32' S, 73° 29' W; Strait of Magellan, 52° 30.0' S, 68° 32.2' W	LBS, DGA
28 Apr 1980	1	25° 04' S, 74° 18' W	LBS, DGA
29 Apr 1980	1	20° 38' S, 75° 31' W	LBS, DGA

petrels seen by SNGH between August and December, whereas none of 1050+ white-chinned petrels showed brown upperwing panels in this period, and only 5 white-chinned petrels were noted with signs of moult: 1 (of 200) on 7 August with outer primaries moulting; 2 (of 100+) on 5 November with primary moult; and 2 (of 75+) on 8 November with inner primary moult. Given the winter breeding season for Westland petrel versus the summer breeding in white-chinned petrel (Marchant & Higgins 1990), distinct differences in moult timing would be expected, at least between comparable age classes. Marchant & Higgins (1990) report wing moult for white-chinned petrels (of unknown breeding status) during January through March. C. A. Taylor (pers. comm.) notes that moult in immature, subadult, and failed breeding white-chinned petrels begins from about February onward, possibly earlier, whereas white-chinned petrels that have bred successfully begin moult about May and it is completed in August. Moulting birds observed in November may be individuals replacing damaged or lost flight feathers.

## DISCUSSION

The occurrence of Westland petrels in South American waters was first demonstrated by the recovery of 2 subadults in Chilean waters (about 35°S) in the Humboldt Current by J. A. Bartle and R. L. Pitman. The birds had been banded as fledglings on their natal ground in New Zealand (Marchant & Higgins 1990). Banding data (J.A. Bartle pers. comm.) suggest that fledglings remain away from nesting areas for as long as 10 years. We suspect that some birds may spend much of this time in the Humboldt Current. All other records known to us other than those in Marchant & Higgins (1990) are included in Table 1. We have located no documented records of Westland petrel for South America for the period 1914-1979, although Harrison (1983) mentions personal observations of possible individuals off western South America. By far the largest concentrations were observed by C. Benesh and R. Q. Randall aboard the research vessel *Akademik Sergey Vavilov* along a 168-km transect off Isla de los Estados, Argentina, on 16 December 1992. At least 340 individuals were observed, often in resting flocks of 20-30 birds; their concentration there was apparently related to the presence of several squid-harvesting vessels. Many of the birds were moulting the central primaries.

Shipboard survey work in and near the areas listed in Table 1 from 1969 to 1972 (Brown *et al.* 1975) revealed

only white-chinned petrels, as was also the case in seas between South America and South Georgia and the Falkland Islands in 1954-1964 (Tickell & Woods 1972) and 1985-1986 (Hunt *et al.* 1992), in the Drake Passage and Bransfield Strait in 1981 (Starck & Wyrzykowski 1982) and 1985 (Hunt *et al.* 1990; Heinemann *et al.* 1989), off southern South America in 1983 (Hunt & Veit 1983), and the vicinity of the Cape Horn Islands, 1985-1986 (Clark *et al.* 1992). The dearth of Westland petrel records from earlier surveys may be attributed to observers' unfamiliarity with the species, though other observers familiar with Westland petrel and aware of recent records of its occurrence off South America have repeatedly crossed Drake Passage without seeing it (R. Rowlett, pers. comm.). Preliminary data suggest that the species may frequent mostly shelf and littoral waters, as indicated by Freeman (1998). The only published survey of continental shelf waters off Argentina reveals no records of Westland petrels or any *Procellaria* petrels in neritic waters (Jehl 1974).

In addition to the 45 records of 458+ birds listed in Table 1, we are aware of other undocumented reports of Westland petrel from birdwatchers taking single-day pelagic trips from Valparaiso, all in 1992-2000. The many records off central Chile (Valparaiso) probably reflect the ease with which bird enthusiasts can reach this area, and the more southerly records reflect the increasingly frequent shipboard natural history tours from southernmost Chile and Argentina to the Falkland Islands, South Georgia, and the Antarctic Peninsula.

The records known to us span the late austral winter (7 August) into the austral fall (29 April), but this may be an artifact of coverage; little shipboard scientific research and no public tours have been conducted in these areas during the austral winter. It may also be, however, that Westland petrels, as austral winter nesters (unlike most southern hemisphere Procellariiformes), are present in low numbers off South American coasts during that season, although non-breeders could be found at any time of year in the vicinity. Almost all our records of Westland petrels (Table 1) were from littoral and neritic waters.

The records in Table 1 provide further data on the occurrence off South America of this vulnerable species. The record off Arica, Chile, within sight of the Peruvian border, is of particular interest, as it suggests that Westland petrels may range over Humboldt Current waters in much the same way as other Procellariiformes breeding in New Zealand, such as northern and southern royal albatrosses

(*Diomedea e. epomophora* and *D. e. sanfordi*), and Salvin's (*Diomedea salvini*) and Chatham Island (*D. eremita*) mollymawks (Marchant & Higgins 1990; Haase 1994; Howell 1996).

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