

## Records of Southern Giant Petrel *Macronectes giganteus solanderi* and Northern Giant Petrel *M. halli* off southern Brazil

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We report records, and comment on the identification, of giant petrels, *Macronectes*, from Rio Grande do Sul (RS), in southernmost Brazil, based on previously unidentified specimens in the seabird collection of the Fundação Universidade Federal do Rio Grande (FURG; see Vooren & Fernandes 1989), Rio Grande, RS, Brazil. All measurements are given in mm and colour names (Capitalised) and codes follow Munsell Color (1971).

Southern Giant Petrel *Macronectes giganteus* breeds at 40–60°S on subantarctic and Antarctic islands, the Antarctic Peninsula and continent, and at several localities off Argentine coasts (Carboneras 1992). On dispersal, it moves north to temperate and even subtropical waters, often following cold currents along the coasts of South America, southern Africa and Australia (Punta & Saravia 1991, Carboneras 1992). The species has long been considered monotypic (e.g. Murphy 1936, Bourne & Warham 1966, Carboneras 1992), but those populations breeding on the Falklands and Gough (South Atlantic), as well as on the Argentine coast, present several distinctive characters compared to birds breeding elsewhere, e.g. generally darker plumage becoming less rapidly paler with age, smaller size and differences in behaviour, being on the whole clearly more gregarious (Voisin 1982). In addition, the green bill tip is more vivid, particularly in the Gough population. Their reproductive schedule is also somewhat peculiar, although this may merely reflect a response to different ecological conditions. Johnstone *et al.* (1976), as well as Peters (1979), thought these birds to be of uncertain taxonomy, but Voisin & Bester (1981) and Voisin (1982) considered them to represent a well-defined subspecies, *Macronectes giganteus solanderi* Mathews, 1912, the South Atlantic Giant Petrel.

*M. giganteus* is a fairly common winter visitor along the Brazilian coast from RS north to São Paulo and Rio de Janeiro (Sick 1997). Birds of the nominate subspecies ringed in the South Orkneys, South Georgia and the Antarctic Peninsula have been recovered in Brazil, and one from Macquarie (Australian Antarctic Territory) was recovered in Uruguay (Olmos 2002). The subspecies *solanderi* has also been mentioned from the southern Brazilian coast, based solely on morphometrics of specimens taken off RS and Santa Catarina, but without details of these specimens' plumage pattern (Soto *et al.* 2003).

FURG houses a specimen (FURG 12; Fig. 1), referable to *solanderi*, found dead on the beach at São José do Norte (c.32°01'S, 52°03'W), southern RS, on 6 June



Figure 1. Southern Giant Petrel *Macronectes giganteus solanderi* (FURG 12) from São José do Norte, Rio Grande do Sul, south Brazil (C. E. Fedrizzi)

1983. Its plumage presents the following pattern: head Dark-grey (10YR 4/1) with feathers of forehead, lores and nape tipped Light-grey (10YR 7/1); throat and neck Light-grey with the feather tips Dark-grey; remaining upperparts and uppertail uniform Grey (10YR 6/1); flanks Grey; breast, belly, undertail- and underwing-coverts Grey; under surface of primaries Grey with very Dark-grey (10YR 3/1) tips, and underside of rectrices Grey.

This specimen's plumage places it in type II of Voisin (1982), i.e., entirely brown or grey birds, the area around the base of the bill not distinctly paler (immatures). Birds belonging to *solanderi* have little brown pigment in their plumage, which is thus much greyer than that of the nominate. *M. g. solanderi* commences breeding while still in very dark plumage. In the Falklands, 14% of birds breed when still in type II plumage, an exceptional occurrence in the nominate form. Also, in the Falklands, most birds belong to types IV and V, not types VI to VIII (as in nominate birds from the Crozet archipelago in the south Indian Ocean). Similar observations have been made at Gough and in colonies off the Argentine coast (Voisin & Bester 1981, Voisin 1982, Punta & Saravia 1991; G. Punta pers. comm. 1996). However, it is impossible to know whether the FURG specimen had already bred.

The measurements of the FURG specimen coincide with those of *M. g. solanderi* from the Falklands, Gough and Argentina (Voisin & Bester 1981, Voisin 1982; G. Punta pers. comm. 1996; Table 1). The bird was originally sexed as a female, but the mensural data suggest that it is probably male.

TABLE 1

Measurements (mm) of males and females of *Macronectes giganteus solanderi* from the Falklands and Gough (Voisin & Bester 1981, Voisin 1982), Chubut (Argentina; G. Punta pers. comm. 1996) and of the specimen found on the coast of Rio Grande do Sul (RS; FURG 12), south Brazil. Data are: mean, ( $\pm$  standard deviation; range), and  $n$  = sample size.

Population		Culmen	Bill depth	Tarsus	Wing
Gough	Males	95.2 (2.3; 91.5–98.5) $n=17$	30 (1.8; 28.5–32) $n=17$	95.3 (2.02; 92–99) $n=17$	507.5 (485–535) $n=4$
	Females	83.3 (2.9; 79–88) $n=12$	27.3 (0.69; 27–28.5) $n=12$	88.3 (3.11; 85–95) $n=12$	478, 491
Falklands	Males	98.9 (2.8; 95–102) $n=4$	30.05 (1.68; 28.5–32.5) $n=4$	93.4 (1.38; 92–95) $n=4$	507.3 (6.18; 500–515) $n=4$
	Females	84.1 (3.05; 80–89) $n=9$	25.9 (1.06; 27.5–24.5) $n=8$	83.1 (2.59; 77–86) $n=10$	484 (9.45; 470–500) $n=10$
Chubut	Males	96.7 (1.5; 95.1–99.3) $n=6$	30.1 (1.0; 29.0–30.8) $n=3$	93.3 (2.9; 89–95) $n=4$	507.2 (10.1; 493–518) $n=6$
	Females	83.3 (2.0; 81.8–88) $n=8$	26.1 (0.2; 25.8–26.5) $n=6$	86.6 (20.2; 83–89) $n=6$	474.1 (12.6; 446–490) $n=8$
RS	Male?	92.3	33.14	91.16	490

Furthermore, a few juvenile *solanderi* metal- and colour-ringed in early 2004 at Patagonian colonies have recently been reported off Rio Grande do Sul (F. Quintana *et al.* unpubl. data per F. Rabuffetti *in litt.* 2004), suggesting that at least some Argentine South Atlantic Giant Petrels occur regularly along the southern Brazilian coast, where they mix with Antarctic birds.

Northern Giant Petrel *M. halli* breeds on subantarctic islands and South Georgia (at 46–59°S), and disperses widely over the Southern Ocean (Shaughnessy & Voisin 1981, Carboneras 1992). In Brazil, the species is known from only three published records: a juvenile found on 27 September 1994 at Ilha Comprida, São Paulo (*c.*24°50'S, 47°45'W; Martuscelli *et al.* 1995); a female found on 15 October 1999 at 'Praia do Leste', Iguape, São Paulo (24°13'S, 52°40'W); and an adult found on 2 October 2000 near Albardão lighthouse, southern RS (33°13'S, 52°40'W) (Bugoni *et al.* 2003).

The FURG has another three adult male specimens from southern RS: FURG 272 (culmen 113.19; bill depth 40.69; tarsus 88.63; wing 530), found near Sarita lighthouse (*c.*32°00'S, 52°10'W) in April 1983; FURG 275 (culmen 106.55; bill

depth 41.23; tarsus 97.70; wing 505), from 'Praia do Cassino' (c.32°11'S, 52°10'W) on 1 December 1991; and FURG 216 (culmen 100.73; bill depth 42.16; tarsus 92.64; wing 531), without precise locality (between Cassino and Sarita) on 5 October 2000. The plumage of these specimens presents a well-marked contrast between under- and upperparts. *M. halli* is fairly common off Uruguay, and seven ringed birds from Kerguelen, Crozet and Macquarie have been recovered there (Olmos 2002). Most giant petrels from south Brazil have been identified as *M. giganteus*, probably because general references (e.g. Belton 1984) listed only *M. giganteus*, and *M. halli* was first recorded only in the 1990s. Future surveys will probably reveal that *M. halli* is more common in the region than previously supposed.

### Closing remarks

At sea, separation of *M. giganteus* and *M. halli* at species level is difficult, unless they are observed in good conditions. The best discriminating criteria are bill colour and plumage pattern (Voisin & Teixeira 1998). *M. g. solanderi* acquires a paler head and neck at an older age and slower compared to the nominate subspecies (Voisin 1982), but the grey tone of its plumage cannot be appreciated at a distance, as is also the case with its smaller size. Also, mensural data alone cannot be used to determine specimens away from their breeding grounds, as there is much overlap (Voisin & Teixeira 1998). Most giant petrels encountered in Brazil are juveniles or immatures (e.g. Sick 1997, Voisin & Teixeira 1998), which can only be identified on the basis of bill coloration. Beached carcasses may be very difficult to determine as, frequently, bill colour has completely faded due to insolation.

Besides the specimens mentioned, FURG houses five more skins, of which one (FURG 274; culmen 98.84; bill depth 38.48; tarsus 89.25; and wing 510) is probably *M. giganteus*. It has a pale head and neck and its underparts are only slightly paler than its upperparts. The remaining three are immatures (i.e. plumage type II of Voisin 1982). Specimen FURG 276 was ringed in the Antarctic Peninsula and is thus a *M. g. giganteus*, whereas the others (FURG 210, 211 and 273) have completely lost their bill-tip coloration, and cannot be specifically determined.

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