South Polar Skua *Catharacta maccormicki* in Rio Grande do Sul, southern Brazil

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Received 4 April 2017; final revision accepted 2 November 2017
Cotinga 40 (2018): 44–49
published online 16 June 2018

Registros de mandrião-do-sul *Catharacta maccormicki* para o Rio Grande do Sul, sul do Brasil, são apresentados, circunstanciados e discutidos. Indivíduos dessa espécie foram fotografados ao largo da costa do estado em novembro de 2011 e maio de 2013. Ainda, em março de 2011, um indivíduo de plumagem atípica debilitado foi registrado na praia de Xangri-lá, na costa norte do estado; apesar de não podermos excluir a possibilidade de um híbrido entre *C. maccormicki* e *C. chilensis*, sugerimos ser um mandrião-do-sul. Um espécime na coleção científica do Museu de Ciências Naturais da Fundação Zoobotânica do Rio Grande do Sul, cuja identificação poderia incluir *C. maccormicki*, foi reexaminado; este pertence ao grupo *C. antarctica*, provavelmente da subespécie *lonnbergi*.

Skuas (Stercorariidae) comprise seven species of predatory/scavenging seabirds that breed in temperate and polar regions of both hemispheres, and are long-distance migrants[10,12,14,18]. Southern Hemisphere skuas have been considered to form a superspecies complex of three species, one of which, Brown Skua *Catharacta antarctica* (generic assignment follows Carlos[6]) comprises at least three subspecies[9,10,14,18]. South Polar Skua *C. maccormicki* and the three subspecies of Brown Skua—*C. a. antarctica*, *C. a. hamiltoni* and *C. a. lonnbergi*—are phenotypically similar, displaying generally brown to greyish plumage with golden hackles on the nape and ear-coverts. The most distinctive taxon is Chilean Skua *C. chilensis*, which has a dark cap and cinnamon underparts[10,14,18].

South Polar Skua is smaller than Brown and Chilean Skuas, and is polymorphic: a pale morph with overall creamy coloration but somewhat dark wings, and a dark morph that is brown with dark wings. The species breeds in the austral spring and summer (October–February) on the South Shetland Islands and coasts of Antarctica. Post-breeding, it performs a trans-equatorial migration, wintering as far north as Japan and Alaska in the Pacific, and Greenland in the Atlantic[10,14,18]. In Brazil, the species is most frequent off the north-east coast between the states of Ceará and Sergipe, 02–09°S[7,13,20], with a few records from south-east and southern coasts[15,17,19]. Here, we review previous information and present documented records of South Polar Skua in the state of Rio Grande do Sul.

Vooren *et al.*[23] reported a sight record of South Polar Skua on Cassino beach, municipality of Rio Grande, in the austral winter. However, Vooren & Brusque[22] discarded this record due to both difficulties of identifying southern skuas and the lack of documentation. A specimen collected 5 km south-west of Cassino (32°14'S 52°12'W) on 29 July 1974 was tentatively identified as a nominate race Brown Skua[2]. The skin (MCN 1756) is currently at the Fundação Zoobotânica do Rio Grande do Sul, Porto Alegre, Rio Grande do Sul, Brazil. Bencke[3] examined this specimen but was unable to reach a definite conclusion as to its identification, either Brown or South Polar Skua, or even a hybrid between them. Because of doubts regarding the specific (or subspecific) identification of this specimen, South Polar Skua has been considered to be of either 'probable' or 'hypothetical' occurrence in Rio Grande do Sul[3,4].

Specimen MCN 1756 was measured by NWD using callipers (to the nearest 0.1 mm) and a ruler: exposed culmen (from the tip to the feathers) 53.04 mm; bill depth at gonys 19.10 mm; tarsus (from the middle of mid-tarsal joint to the distal end of the tarso-metatarsus) 76.48 mm; and flattened wing chord 410 mm. Tarsus length alone can be used as a diagnostic to separate South Polar Skua from *C. a. lonnbergi*[9]. In this respect, MCN 1756 falls within the range of both *C. a. lonnbergi* and *C. a. hamiltoni* (Tables 1–2). Similarly, the exposed culmen of the specimen falls within the range of *C. a. lonnbergi* and *C. a. hamiltoni*, although in this case it also is in the uppermost range of female South Polar Skua (Tables 1–2). According to Devillers[9], the ratios of wing to tarsus length (W/T) and exposed bill to tarsus length (B/T) can also be used to separate South Polar Skua from *C. a. antarctica*. The W/T ratio of MCN 1756 is 5.36, thus agreeing well with *C. antarctica* (*sensu lato*) but excluding South Polar Skua (Table 2)[21]. The B/T ratio of the specimen in question is 0.69, i.e. within the known ranges of all Southern Hemisphere skuas, but far from the mean for South Polar Skua (Table 2). MCN 1756 has generally brown plumage, slightly darker on the upperparts, and the mantle exhibits a few yellowish streaks (Fig. 1). Consequently, this specimen is neither a *C. chilensis*, which

Table 1. Measurements (mm) of Southern Hemisphere *Catharacta* taxa. Data = range and (sample size). Sources: (1) Murphy[12], (2) Spellerberg[21], (3) Olsen & Larsson[14], and (4) Votier *et al.*[24].

		C. antarctica antarctica		*C. antarctica lonnbergi*		*C. antarctica hamiltoni*		*C. chilensis*		*C. maccormicki*	
		Males	**Females**	**Males**	**Females**	**Males**	**Females**	**Males**	**Females**	**Males**	**Females**
Wing	(1[a])	366–387 (10)	378–398 (6)	401–416 (6)	397–416 (8)	–	–	390–398 (7)	387–411 (5)	–	–
	(3[b])	355–393 (44)	372–402 (38)	378–442 (54)	392–455 (40)	372–409 (33)	378–423 (28)	368–405 (35)	375–418 (29)	370–417 (102)	377–421 (100)
	(4[a])	355–393 (44)	372–402 (38)	396–429 (101)	408–442 (101)	388–413 (38)	398–427 (35)	–	–	–	–
Culmen	(1[a])	46.5–50.3 (10)	47.0–50.8 (6)	54.3–58.2 (6)	53.5–56.7 (8)	–	–	49.4–56.1 (7)	51–56 (5)	–	–
	(2[c])	–	–	–	–	–	–	–	–	48.1–51.3 (21)	47.0–53.6 (24)
	(3[c])	41.1–51.3 (33)	44.9–52.0 (38)	46.6–59.0 (55)	46.2–61.0 (48)	49.2–56.0 (30)	50.5–57.9 (30)	45.6–51.4 (30)	45.2–53.3 (26)	43.0–52.5 (101)	43.6–54.0 (100)
	(4[a])	41.1–51.3 (33)	44.9–52.0 (38)	47.5–56.4 (101)	47.8–59.0 (101)	49.3–56.5 (38)	50.1–57.0 (35)	–	–	–	–
Bill depth	(3[a])	16.4–20.2 (34)	16.4–21.0 (38)	16.5–21.6 (53)	16.7–22.3 (46)	15.5–18.5 (30)	17.7–19.4 (30)	15.6–18.7 (35)	15.8–18.8 (29)	15.2–19.0 (102)	15.5–20.3 (95)
	(4[a])	16.4–20.2 (34)	16.4–21.0 (38)	19.0–21.8 (101)	19.3–22.4 (101)	17.8–19.5 (38)	17.8–20.0 (35)	–	–	–	–
Tarsus	(1[a])	64.3–70.0 (10)	64.7–69.6 (6)	70.8–79.3 (6)	72.8–79.0 (8)	–	–	60.6–72.3 (7)	66–70 (5)	–	–
	(2[d])	–	–	–	–	–	–	–	–	58.6–68.0 (21)	58–76 (24)
	(3[e])	60.9–70.0 (34)	62.3–71.0 (38)	65.0–84.6 (52)	66.5–84.5 (46)	64.7–79.0 (30)	61.9–77.4 (30)	58.1–72.3 (35)	59.4–73.0 (29)	56.4–70.3 (102)	56.6–74.4 (98)
	(4[a])	60.9–70.0 (34)	62.3–71.0 (38)	72.5–82.9 (101)	73.3–85.0 (101)	71–76 (36)	72–79 (33)	–	–	–	–
Tail	(1[a])	139.6–154.5 (10)	140.0–156.7 (6)	153.5–162.4 (6)	143.4–157.0 (8)	–	–	140.0–158.4 (7)	135.6–143.0 (5)	–	–
	(4[a])	140–154 (10)	140–157 (6)	–	–	152–158 (9)	148–154 (9)	–	–	–	–

[a] Methods unknown. [b] Flattened wing chord. [c] From the tip to the feathers. [d] Distal end of the upper side of the web to articulation with the tibio-tarsus. [e] From the inter-tarsal joint to the distal end or the last undivided scale before the toes diverge.

Table 2. Biometrics (mm) and ratios of Southern Hemisphere *Catharacta* taxa (sexes combined). Data = range (sample size) and, where available, [mean] or [mean ± SD]. Sources: (1) Murphy[12], (2) Spellerberg[21] and (3) Devillers[9].

		C. antarctica antarctica	*C. antarctica lonnbergi*	*C. antarctica hamiltoni*	*C. chilensis*	*C. maccormicki*
		Both sexes	**Both sexes**	**Both sexes**	**Both sexes**	**Both sexes**
Wing	(1[a])	366–398 (17)	397–416 (17)	–	365–412 (31)	390–410 (11)
	(3[a])	355–397 (35–36)	389–442 (40–41)	376–398 (9–10)	372–415 (16–18)	373–412 (80)
Culmen	(1[a])	46.5–50.8 (17)	53.5–58.2 (17)	–	47.4–56.1 (31)	47.6–51.8 (11)
	(2[b])	–	–	–	–	[49.3 ± 2.3]
	(3[a])	41.2–49.5 (35–36)	47.5–56.0 (40–41)	49.6–54.5 (9–10)	43.6–49.0 (16–18)	42.6–49.6 (80)
Tarsus	(1[a])	61.2–70.0 (17)	69.6–79.3 (17)	–	58.2–71.5 (31)	62.4–66.4 (11)
	(2[c])	-	–	–	–	[63.1 ± 4.2]
	(3[a])	61.5–72.9 (35–36)	71.5–85.0 (40–41)	67.5–75.0 (9–10)	64–71 (16–18)	58.5–70.0 (80)
Tail	(1[a])	139.6–156.7 (17)	143.4–162.4 (17)	–	131.0–158.4 (31)	140–152 (11)
W/T[1]	(3[a])	5.24–5.97 (35–36) [5.52]	4.91–5.97 (40–41) [5.39]	5.11–5.70 (9–10) [5.38]	5.38–5.96 (16–18) [5.69]	5.61–6.69 (80) [6.17]
B/T[2]	(3[a])	0.62–0.73 (35–36) [0.66]	0.60–0.74 (40–41) [0.67]	0.66–0.80 (9–10) [0.70]	0.63–0.72 (16–18) [0.69]	0.66–0.80 (80) [0.73]

[1]Wing to tarsus ratio; [2]Bill to tarsus ratio. [a]Methods unknown. [b]From the tip to the feathers. [c]Distal end of the upper side of the web to articulation with the tibio-tarsus.

has an obvious capped appearance and cinnamon underparts, nor a pale-morph South Polar Skua, which shows well-marked contrast between the upperparts and underparts. On the contrary, its plumage agrees well with *C. a. lonnbergi*[9]. Therefore, morphology strongly suggests that MCN 1756 belongs to the *C. antarctica* group, probably to race *lonnbergi*.

On 27 March 2011, an injured skua was found on a beach in the municipality of Xangri-lá (c.29°48'S 50°02'W), northern Rio Grande do Sul, and was sent firstly to the wildlife rehabilitation centre at the Universidade Federal do Rio Grande do Sul (UFRGS) and thereafter to the same institution's veterinary hospital. It had a creamy head (except for brown around the eyes), hindneck, breast and belly, whereas the wings, back and tail were brownish with narrow yellowish streaks. The bill was blue-grey with a blackish tip (Fig. 2). The paler hindcollar, and the marked contrast between the upperparts and underparts match a pale-morph South Polar Skua[9,14,18]. However, further examination revealed a cinnamon cast to the bird's underwings-coverts—a feature recalling Chilean Skua[14,18]. Therefore, the possibility of this bird being a hybrid South Polar × Chilean Skua cannot be eliminated (see Reinhardt *et al.*[16]). Hybrids between these two species more often display plumage recalling that of Chilean Skua[16], although in this case the bird's plumage was much like that of a pale-morph South Polar Skua, except for the cinnamon cast to the underwings.

The bird died on 25 November 2011, but the carcass was inadvertently discarded before it could be measured. Consequently, no documentation other than the photograph reproduced here (Fig. 2) is available. Although we highlight the possibility of it being a hybrid (see 'bird 3', Fig. 1 in Reinhardt *et al.*[16]), based on plumage alone we consider that it is more likely to have been a South Polar Skua, albeit an atypical variant.

On 7 November 2011, NWD photographed a South Polar Skua from the *R/V Atlântico Sul*, off Rio Grande do Sul at 29°24'S 47°33'W (Fig. 3). There was good light, sea state was Beaufort scale 5, and the north-east wind measured 20 knots. The bird followed the vessel closely for c.15 minutes before flying off. It showed visible contrast between the blackish-brown back plus both wing surfaces, and pale brown head, neck, breast and belly, which pattern matches that of South Polar Skua. Furthermore, the bird had a dark brown area around the eyes and an obvious paler hindcollar, both of which are also features of South Polar Skua[9,14].

Two additional records of South Polar Skua in Rio Grande do Sul have been claimed (www.wikiaves.com.br). The first (WA978971; Fig. 4) was a bird photographed by P. Fenalti on 31 May 2013

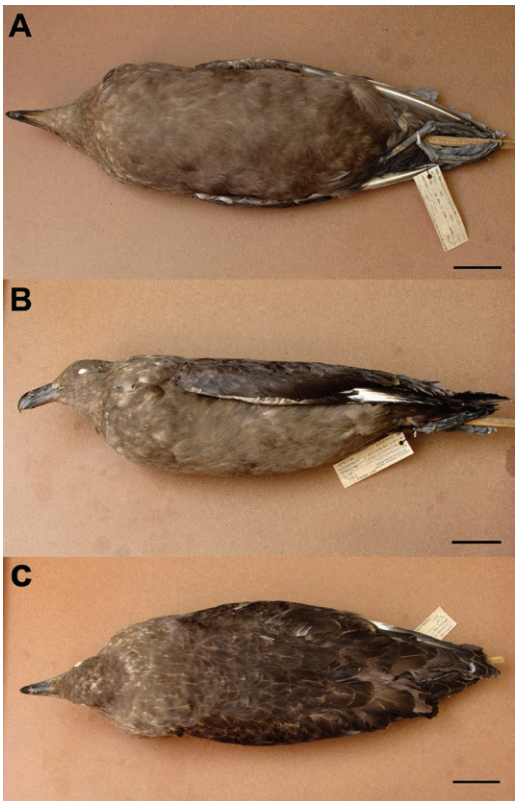

Figure 1. Specimen (MCN 1756) of Brown Skua *Catharacta antarctica*, housed at Fundação Zoobotânica do Rio Grande do Sul, collected at Cassino, Rio Grande do Sul, southern Brazil, 1974, in (a) ventral view, (b) lateral view, and (c) dorsal view; scale bar = 5 cm (G. A. Bencke)

at sea (c.30°00'S 50°05'W) near Tramandaí. It was a typical pale-morph South Polar Skua, with creamy underparts contrasting with a dark brown back and upper- and underwing-coverts. Furthermore, it was replacing some primaries and secondaries, in accordance with the moult schedule outlined by Olsen & Larsson[14]. However, the other (WA342354, WA337805, WA978971), photographed on 19 April 2011 on the beach at Tavares, has barred undertail-coverts, which suggests it was probably a Pomarine Skua *C. pomarina*[14].

Like other migratory seabirds, South Polar Skuas make use of winds blowing over the ocean's surface to facilitate their migration, resulting in a 'figure-of-eight' pattern[1,9]. This hypothesis was recently corroborated by Kopp *et al.*[11], who used light-level geolocators to track seasonal movements from the South Shetlands. They also noted that South Polar Skuas follow a broad corridor parallel to the east coast of South America, including Brazil, during both north- and southbound migrations. In a review of ringing recoveries for non-breeding

Figure 2. Atypically plumaged South Polar Skua *Catharacta maccormicki*, or a possible hybrid between South Polar Skua and Chilean Skua *C. chilensis*, found at Xangri-lá, Rio Grande do Sul, south Brazil, March 2011, in (a) general view, (b) ventral view, and (c) head detail, showing lack of dark crown (CECLIMAR/IB/UFRGS)

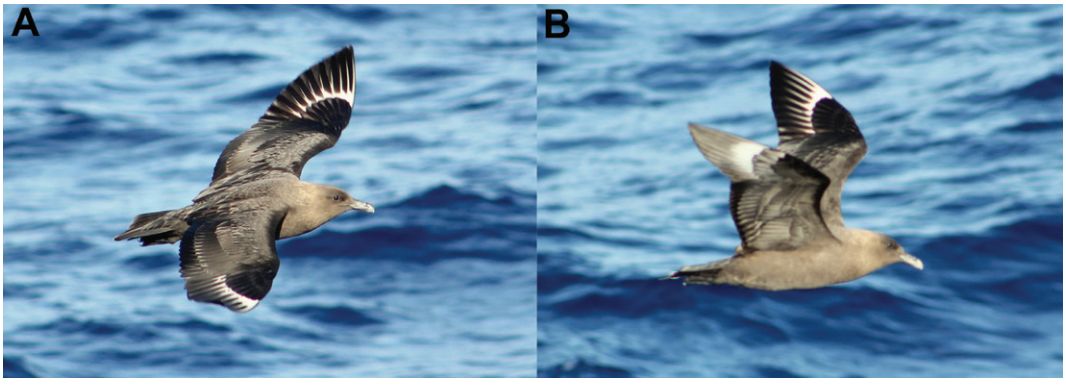

Figure 3. South Polar Skua *Catharacta maccormicki*, off Rio Grande do Sul, south Brazil, November 2011 (N. W. Daudt)

Figure 4. Pale-morph South Polar Skua *Catharacta maccormicki*, municipality of Tramandaí, Rio Grande do Sul, south Brazil, May 2013 (P. Fenalti)

seabirds in Brazil, Olmos[13] suggested that the concentration of recoveries of South Polar Skuas in the north-east of the country is due to the species' migratory habits, following the southern branch of the Equatorial Current, and to the relatively narrow continental shelf. In Rio Grande do Sul, the continental shelf is wide, extending up to 180 km offshore[5]; therefore, it is expected that migrating South Polar Skuas keep well out to sea, coming inshore only rarely. This, coupled with the few at-sea studies of seabirds in the region and the problems of skua identification, may explain the

lack of previous records of South Polar Skua in the state.

Our reconsideration of alleged records of South Polar Skua in Rio Grande do Sul revealed that three of them cannot be accepted, namely the sight record from Cassino[22,23] due to lack evidence to verify the identification; the specimen at MCN-FZBRS (which is a Brown Skua, a species with several previous records in the state[3,4]); and the bird photographed at Tavares. Photographs of the injured bird at Xangri-lá (Fig. 2) suggest it was a South Polar Skua, but we cannot eliminate the possibility that it was a hybrid South Polar × Chilean Skua. The birds photographed at sea (Figs. 3–4) represent the only confirmed records of South Polar Skua for the state of Rio Grande do Sul[4,8].

Acknowledgements

We are grateful to Glayson A. Bencke (FZBRS) for permitting NWD to examine the specimen in his care and for providing the photographs used here; and Paulo Fenalti for kindly allowing us to use his photograph. We also thank personnel at at CECLIMAR / UFRGS, FAVET / UFRGS and PRESERVAS for their assistance. NWD thanks Eduardo R. Secchi for inviting him to take part in 'Projeto Cetáceos do Talude Sudeste-Sul – FURG/Chevron', sponsored by Chevron Brasil Petróleo, and Juliana C. Di Tullio, the survey's leader. Our referees, Daniel López-Velasco, Dick Newell and Fabio Olmos, commented constructively on the submitted manuscript. NWD & AP are supported by scholarships from the Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq) and CJC is supported by the Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (CAPES), Brazil.

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