New records, distribution and status of six seabird species in Brazil

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ABSTRACT. Distribution records of poorly-known species are currently the most explored theme in the Brazilian seabird literature. If properly evaluated, this kind of information can improve our knowledge on distribution, migration and status of occurrence of these species. In this note we present new records for six species of poorly-known seabirds in the Brazilian coast, reviewing distribution records and defining their status of occurrence in the country. We consider *Chionis albus* (Gmelin, 1789) a pseudo-vagrant in Brazil and define its status as a scarce seasonal visitor from southern South America. We present the first records of *Leucophaeus atricilla* (Linnaeus, 1758) for Trindade Island, and of *Leucophaeus pipixcan* (Wagler, 1831) for the state of Rio Grande do Sul, and determined that the former is a vagrant in eastern Brazil and the latter a vagrant across the country. *Anous stolidus* (Linnaeus, 1758) is a vagrant in southernmost Brazil. We were unable to determine if records of *Chlidonias niger* (Linnaeus, 1758) for Brazil and southern South America refer to vagrancy or pseudo-vagrancy. Additionally, we verified the occurrence of breeding individuals of *Anous minutus* Boie, 1844 on Martin Vaz Island and confirmed that there is no evidence of breeding on neighboring Trindade Island.

KEYWORDS. Vagrancy, pseudo-vagrancy, migration, Rio Grande do Sul, Trindade and Martin Vaz Islands.

RESUMO. Novos registros, distribuição e *status* de seis espécies de aves marinhas no Brasil. Registros de ocorrência de espécies pouco conhecidas têm sido o tema mais explorado na literatura sobre aves marinhas no Brasil. Se avaliado de forma adequada, esse tipo de informação pode contribuir para a compreensão de padrões de distribuição geográfica, migrações e definição do *status* de ocorrência dessas espécies. Neste estudo, apresentamos novos registros para seis espécies de aves marinhas pouco conhecidas no litoral brasileiro, revisando sua distribuição e definindo seu *status* de ocorrência no país. Consideramos *Chionis albus* (Gmelin, 1789) um pseudo-vagante no Brasil e definimos seu *status* como visitante sazonal escasso, oriundo do sul da América do Sul. Apresentamos os primeiros registros de *Leucophaeus atricilla* (Linnaeus, 1758) para a Ilha da Trindade e de *Leucophaeus pipixcan* (Wagler, 1831) para o estado do Rio Grande do Sul, e definimos que a primeira é vagante no Brasil oriental e a última vagante em todo o território nacional. *Anous stolidus* (Linnaeus, 1758) é vagante no extremo sul do país. Não foi possível determinar se os registros de *Chlidonias niger* (Linnaeus, 1758) para o Brasil e sul da América do Sul referem-se a vagância ou pseudo-vagância. Adicionalmente, verificamos a reprodução de *Anous minutus* Boie, 1844 na Ilha de Martin Vaz e confirmamos a inexistência de evidências de nidificação para a vizinha Ilha da Trindade.

PALAVRAS-CHAVE. Vagância, pseudo-vagância, migração, Rio Grande do Sul, Ilhas da Trindade e Martin Vaz.

Knowledge of seabirds inhabiting Brazil's extensive coastline and numerous coastal and oceanic islands has increased from the pioneering studies of Ihering (1888), Nicoll (1906) and Murphy (1915) to recent reports focusing mainly on distribution, behavior and conservation (see Vooren & Brusque, 1999; Branco, 2004; De Luca *et al*., 2006; Moraes-Ornellas, 2009 and references therein). Despite these advances, the latitudinal gradient of 7,300 km spanning along the Brazilian seaboard (De Luca *et al*., 2006) and the isolation of some islands still pose major obstacles for the development of marine ornithology in Brazil. Not surprisingly, distribution records of poorly-known species are the most explored theme in the recent Brazilian seabird literature (Moraes-Ornellas, 2009). For some of these species, sound considerations on distribution and status are lacking simply because available records scattered in the literature are not pooled together for proper analysis.

In this study we report new records for six species of seabirds from the littoral of Rio Grande do Sul, Brazil's southernmost state, and Trindade and Martin Vaz Islands, off the coast of the state of Espírito Santo. We used background data and thoroughly reviewed previous distributional records following guidelines in Frey (2009) and Dias *et al*. (2010) to elucidate if an extra-limital record refers to range expansion, range extension or vagrancy (see Dias *et al*., 2010). We define background data as "records of species other than the taxon of interest that are likely to be documented using the same sampling methods", range expansion as "an enlargement of a

species range through dispersal and then the establishment of new populations", and range extension as "the discovery of previously undocumented populations" (*sensu* FREY, 2009). In accordance to DIAS *et al*. (2010), we consider range extension analogous to pseudo-vagrancy (*sensu* GILROY & LEES, 2003), *i.e*., "nominally" extra-limital records of individuals that might actually be using previously unknown migration routes to unknown wintering grounds albeit at very low densities. In this sense, we deliberately apply the term range extension for individuals instead of populations. We see no incongruity in this approach, because pseudo-vagrant individuals are expected to meet and breed on their nesting grounds after migrating, which conceptually constitutes a population.

Any pseudo-vagrant species in a given region is in fact a regular migrant. Therefore, it can be formally attributed to a migratory system and have its regional status of occurrence determined. We classified pseudo-vagrant species in categories of regional status of occurrence following the scheme proposed by the COMITÊ BRASILEIRO DE REGISTROS ORNITOLÓGICOS (2011).

Coordinates were obtained from original sources; when unavailable, we used coordinates in RAND & PAYNTER-JR (1981), PAYNTER-JR (1985), and PAYNTER-JR & TRAYLOR-JR (1991). Coordinates of Laguna Soto, Corrientes, Argentina, were obtained from Google Earth© (6.0, Google Inc., Silicon Valley, CA, USA). Taxonomy and nomenclature followed the COMITÊ BRASILEIRO DE REGISTROS ORNITOLÓGICOS (2011).

Species accounts

Snowy Sheathbill *Chionis albus* (Gmelin, 1789). Breeds on the Antarctic Peninsula, South Georgia, South Orkney, South Shetlands and Elephant Islands, and probably also on the South Sandwich Islands (HARRISON, 1983; BURGER, 1996a). Most birds leave their breeding grounds from late April to early July, while some may over-winter if food is available (BURGER, 1996a). Moves mainly to the Falkland Islands, Tierra del Fuego and southern Patagonia, some reaching Uruguay (BURGER, 1996a). Juveniles appear more migratory than adults (HARRISON, 1983). Vagrant to Brazil, South Africa, Santa Helena and Europe, the most extreme cases being ship-assisted (BURGER, 1996a). Brazilian records are from the states of Rio Grande do Sul, Santa Catarina, Paraná, Bahia and Pernambuco, the latter being ship-assisted (Tab. I).

A single individual feeding on fish remains was observed and photographed (Fig. 1) by R. A. Dias (R.A.D.) on 21 June 1998 at 32º14'45''S, 52º13'12''W, Praia do Cassino, Rio Grande municipality, Rio Grande do Sul. This was the only record obtained on a monthly basis sampling from October 1997 to September 1999. On 31 May 2002 L. Bugoni (L.B.) observed an individual perched on rocks of the eastern jetty (Molhe Leste, 32º11'01''S, 52º04'35''W) at the mouth of the Lagoa dos Patos, São José do Norte municipality, close to a group of sea lions. This was the single record in a two-year monthly study.

Although common to fairly common year-round in some of the Falkland Islands, the species does not seem to be abundant on the Atlantic coastline of South America. On Tierra del Fuego, where it occurs year-round, it is considered common only on the northeastern coast of Isla Grande in March (HUMPHREY *et al*., 1970; CLARK, 1986). Scattered individuals occur year-round associated to sea lion and fur seal colonies in Chubut and Santa Cruz, Patagonia (Fábio Olmos, pers. comm.). It is even less abundant to the north, as denoted by the status of scarce winter visitor in Buenos Aires Province, Argentina (NAROSKY & DI GIÁCOMO, 1993), and uncommon winter visitor in Uruguay (ROCHA, 2006). In the latter it is more numerous in islands with sea lion and fur seal rookeries and haul-outs, being regularly observed in small groups from May to September and also on November (ESCALANTE, 1970).

A close look on Brazilian records, especially those obtained from long-term bird monitoring campaigns (VOOREN & CHIARADIA, 1990; SOARES & SCHIEFLER, 1995; FONSECA *et al*., 2000; our records), suggests that *C. albus* occurs on a regular, albeit supra-annual, basis in the country's southern states. Taking into account that temporal and spatial fluctuations are expected at the margin of an organisms' range (LOMOLINO *et al*., 2006), we consider *C. albus* a pseudo-vagrant in Brazil, and not a vagrant or "exceptional" visitor as previously determined (BELTON, 1994; BURGER, 1996a; SICK, 1997). We propose that this species should be considered a scarce migratory visitor in Brazil, from the southern cone of South America.

Laughing Gull *Leucophaeus atricilla* (Linnaeus, 1758). Breeds locally on the Atlantic and Gulf coasts of North America, on the Pacific coast from southeastern California to western Mexico, and in the Caribbean from the Bahamas and the West Indies to Venezuela and French Guiana (BURGER, 1996b; HOWELL & DUNN, 2007). During the non-breeding period occurs in coasts, bays and estuaries along the Pacific from Mexico to southern Peru and on the Atlantic from North Carolina through the Caribbean to northeastern Brazil (BURGER, 1996b; HOWELL & DUNN, 2007; LIMA *et al*., 2010). There are inland records from central Mexico to Guatemala and, to a lesser scale, in the Andes and Amazonian lowlands of Ecuador and Peru (BURGER, 1996b; HOWELL & DUNN, 2007). Infrequently recorded from the northern Pacific coast of the United States of America, inland locations in North America, Hawaii, Clipperton Atoll, Cocos and Galapagos Islands, northern Chile, Greenland and Europe (HARRISON, 1983; BURGER, 1996b; BURGER & GOCHFELD, 1996; JARAMILLO, 2005; HOWELL & DUNN, 2007). Vagrants are also mentioned from Africa, Australia, Japan and Malaysia (see BURGER, 1996b; TEBB *et al*., 2003 and references therein).

In Brazil it is considered a northern visitor regularly recorded in coastal Amapá, Pará and Maranhão states during the non-breeding season (SICK, 1997; RODRIGUES, 2007; SOUZA *et al*., 2008; LIMA *et al*., 2010). There are also a few inland records from the state of Amazonas (including a banded individual), scattered observations from Ceará, Bahia, Rio de Janeiro and São Paulo, and a questionable undocumented record from the littoral of Rio Grande do Sul (LARA-RESENDE & LEAL, 1982; SICK, 1997; BENCKE, 2001; OLMOS, 2002; LIMA *et al*., 2010).

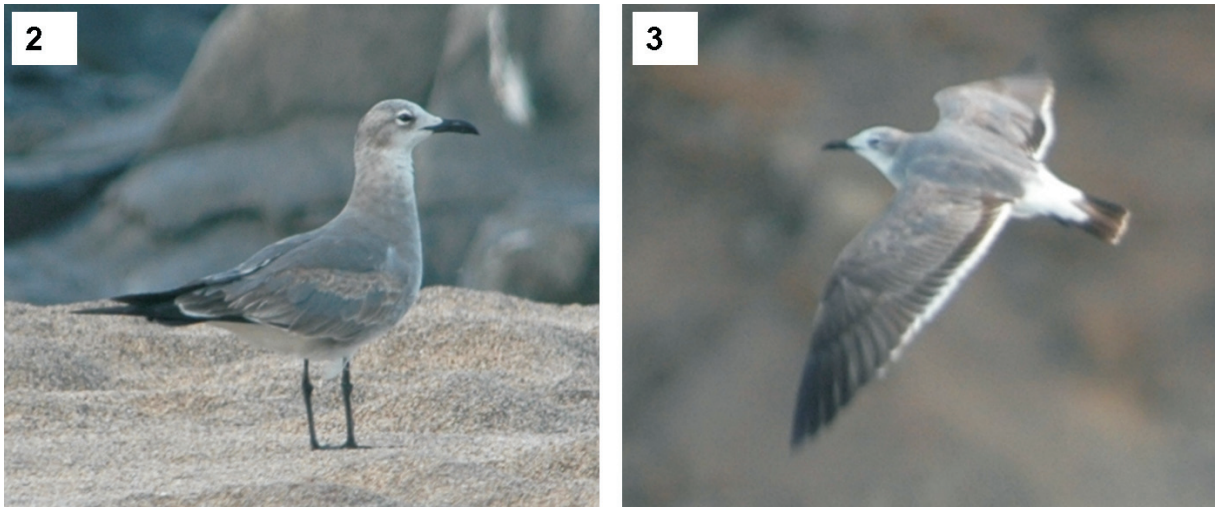
On the afternoon of 1st January 2007, L.B. observed and photographed (Figs 2, 3) an individual at Praia do

Andradas (20º30'51''S, 29º18'23''W), Trindade Island, Brazil. The bird was feeding on the fat of triggerfish that lay on the beach after a mass mortality event (see Pinheiro *et al*., 2010), and apparently on flies that gathered around. This individual was observed again on 4 and 6 January. This part of the island was visited at least twice a week by L.B. between December 2006 and April 2007 and despite intensive searches, individuals of this species were not recorded again. The bird was in late formative plumage, as denoted by the fresh medium upperwing coverts, juvenal feathers mixed with new plumage on the saddle and neck, and a complete distal tail band (Howell & Dunn, 2007). This is the first record for Trindade Is.

Taking into account the fact that wintering areas of *L. atricilla* in South America are located in the northern portion of the continent; that the species has not been recorded from well inventoried localities in Brazil's eastern littoral where other similar-sized gulls are known (*e.g*., *Chroicocephalus maculipennis* (Lichtenstein, 1823), *Chroicocephalus cirrocephalus* (Vieillot, 1818); Vooren & Chiaradia, 1990; Olmos & Silva e Silva, 2001; Branco, 2004, 2007; Cabral *et al*., 2006; Lima, 2006; Barbieri & Mendonça, 2008; Costa & Sander, 2008), and that a recent compilation of Brazilian records (Lima *et al*., 2010) revealed that this gull is genuinely rare throughout this region, we consider our Trindade Is. record to be more parsimoniously attributable to vagrancy than pseudo-vagrancy.

We believe that other records from eastern Brazil mentioned in Lima *et al*. (2010) also relate to vagrancy and not to range expansion. Most of them refer to immature individuals – like the Bahia bird in second basic plumage and the São Paulo specimen in formative plumage – or birds

Figure 1. Snowy Sheathbill *Chionis albus* (Gmelin, 1789) feeding on the remains of a dead fish on 21 June 1998 at Praia do Cassino, Rio Grande do Sul, Brazil. Photograph by Rafael A. Dias.



Figures 2, 3. Laughing Gull *Leucophaeus atricilla* Linnaeus, 1758 recorded on 1st January 2007 at Praia do Andradas, Trindade Island, Brazil. Note the complete distal tail band, suggesting a bird in late formative plumage. Photographs by Leandro Bugoni.

Table I. Summary of records of the Snowy Sheathbill *Chionis albus* (Gmelin, 1789) for Brazil; Brown Noddy *Anous stolidus* (Linnaeus, 1758) for the littoral of Brazil and Uruguay; and Black Tern *Chlidonias niger* (Linnaeus, 1758) for Brazil, Uruguay, Argentina and Chile. Acronyms for states, departments and provinces (S/D/P): CE – Ceará; RN – Rio Grande do Norte; PE – Pernambuco; SE – Sergipe; AL – Alagoas; BH – Bahia; RJ – Rio de Janeiro; SP – São Paulo; PR – Paraná; SC – Santa Catarina; RS – Rio Grande do Sul; RO – Rocha; MA – Maldonado; SA – Salta; CH – Chaco; CO – Corrientes; CD – Córdoba; ME – Mendoza; BA – Buenos Aires; SM – Santiago Metropolitan Area. When the age of the specimens of *A. stolidus* was not mentioned in the original source, we defined that birds less than three years old (the minimum age of first breeding), and/or that lacked extensive white on the head, and/or displayed light brown barring on wing coverts, were young (Y) (*sensu* CHARDINE & MORRIS, 1996).

	S/D/P	COORD	DATE	REMARKS	REFERENCES
Chionis albus					
Praia de Gaibu	PE, Brazil	08°20'S, 34°55'W	Apr 1992	Landed on ship and held in captivity till death	TELINO-JR *et al*. (2006)
Abrolhos	BH, Brazil	17°58'S, 38°43'W	Jun 1992	One observed on island for four days until death	INTERAMINENSE *et al.* (1996)
Near Rio de Janeiro	?, Brazil		Nov 1990	Observed from ship	FONSECA *et al.* (2000)
Arquipélago de Currais	PR, Brazil	25°40'S, 48°20'W	Jun and Jul 1994; May 1986 (*sic*) or Jun 1985	Specimen found dead 12 Jun 1994; exhausted individual observed 17 Jul 1994; one observed on rocks May 1986 or, more likely, June 1985	MORAES & KRUL (1994), SCHERER-NETO (1985), SCHERER-NETO & STRAUBE (1995), Ricardo Krul pers. comm.
Ilhota da Galeta	SC, Brazil	28°32'S, 48°45'W	Aug 1993	One observed on rocks feeding on dead fish and gull pellets	SOARES & SCHIEFLER (1995)
Praia de Itapeva	RS, Brazil	29°36'S, 49°45'W	May 1998	One observed on the beach feeding on dead fish	FONSECA *et al.* (2000)
Farol de Mostardas	RS, Brazil	31°15'S, 50°54'W	Jul 1998	One observed on the beach feeding on whale fat	FONSECA *et al.* (2000)
Lagoa do Peixe	RS, Brazil	31°18'S, 51°00'W			NASCIMENTO (1995)
Molhe Leste	RS, Brazil	32°12'S, 52°05'W	Jun 1975	Pair observed on rocks at the jetties	BELTON (1994)
Praia do Cassino	RS, Brazil	32°11'S, 52°10'W	May 1973; Apr 1983; May 1983; Apr 1984	Dead bird found in April 1984; single birds observed on the beach on other occasions; collected May 1973	BELTON (1994)
Anous stolidus					
Fortaleza	CE, Brazil	03°43'S, 38°30'W		Banded as young at Atol das Rocas; recovered in 11 months; Y	SCHULZ-NETO (2004b)
Praia de Maria Farinha	PE, Brazil	07°40'S, 34°50'W	Feb 1992	Banded at Dry Tortugas, USA	AZEVEDO-JR *et al*. (1994), OLMOS (2002)
?	SE or AL, Brazil				SOUZA (1993)
Salvador	BH, Brazil	12°59'S, 38°31'W	May 1992; Feb 1995	1 specimen on each occasion	LIMA *et al*. (2004)
Bahia N coast	BH, Brazil		Oct 1995	1 specimen	LIMA *et al*. (2004)
Bahia N coast	BH, Brazil		Jul 1996	Banded as young at Abrolhos; recovered in *ca.* 14 months; Y	LIMA *et al*. (2004)
Bahia N coast	BH, Brazil		Apr 1998	Banded as young at Abrolhos; recovered in *ca.* 10 months; Y	LIMA *et al*. (2004)
Bahia N coast	BH, Brazil		Apr 1999	Banded as young at Abrolhos; recovered in *ca.* 10 months; Y	LIMA *et al*. (2004)
Bahia N coast	BH, Brazil		?	5 specimens without details	LIMA *et al*. (2004)
Praia do Foguete	RJ, Brazil	22°53'S, 42°01'W	Apr 1993	Lone bird observed	PACHECO & RAJÃO (1995)
Cabo de São Tomé	RJ, Brazil	22°03'S, 41°05'W	Nov 1990	One flying over the water	PACHECO & RAJÃO (1995)
Rio de Janeiro	RJ, Brazil	22°54'S, 43°14'W	May 1987	Very decomposed corpse	TEIXEIRA *et al.* (1988)
Rio de Janeiro?	RJ, Brazil	22°54'S, 43°14'W?	?	Banded as young at Atol das Rocas; recovered in 12 months; Y	SCHULZ-NETO (2004b)
Ubatuba	SP, Brazil	22°26'S, 45°04'W	Mar 2010	Individual on the water and rocks; Y	SIMPSON & SIMPSON (2010)
Pontal do Sul	PR, Brazil	25°32'S, 48°29'W	Mar 1995	Exhausted individual on the beach; Y	MORAES & KRUL (1996)
Lagoa do Peixe	RS, Brazil	31°18'S, 51°00'W	Mar or Apr 1992	Corpse on the beach	NASCIMENTO (1995), BENCKE (2001)
La Paloma	RO, Uruguay	34°40'S, 54°10'W	Dec 2004	Exhausted individual on the beach	ABENTE *et al*. (2010)
Chlidonias niger					
São Gonçalo do Amarante	CE, Brazil	03°32'S, 38°48'W	Oct 2006	1 non-breeding plumage observed	GIRÃO *et al*. (2008)
Macau	RN, Brazil	05°06'S, 36°37'W	Sep 1986	1 banded in Berlin in 1984 recovered	SICK (1997)
Itamaracá Island	PE, Brazil	07°45'S, 34°51'W	Nov 1988	1 transition plumage observed	TEIXEIRA *et al.* (1989)
Lagoa de Maricá	RJ, Brazil	22°56'S, 42°50'W	Nov 1987	Female in first-winter plumage collected	TEIXEIRA *et al.* (1988)

Tab. I (cont.)

RS N coast	RS, Brazil		Spring 2002	3 observed	Costa & Sander (2008)
Lagoa do Peixe	RS, Brazil	31°18'S, 51°00'W	Jun 1986; Oct 1991	1 alternate observed 1986; captured on many occasions (but see text); 1 captured 1991	Belton (1994), Bencke (2001), Isaac Simão pers. comm.
La Paloma	RO, Uruguay	34°40'S, 54°10'W	Mar 2007	1 basic photographed	Abreu (2010), Adrián Azpiroz pers. comm.
Balneário Solís	MA, Uruguay	34°48'S, 55°22'W	Spring 1973 (?)	1 basic with fresh primaries collected	Escalante (1983)
Tres Pozos	SA, Argentina	23°14'S, 64°03'W	Oct 1928	1 collected	Olrog (1969)
Resistencia	CH, Argentina	27°27'S, 58°59'W	Apr 1988	3 observed	León & Díaz-Neto (1988)
Laguna Soto	CO, Argentina	27°27'S, 58°43'W	Jan & Feb 1984	2-4 individuals in flight	Contreras & Contreras (1984)
Mouth of Rio Segundo	CD, Argentina	30°49'S, 62°222 W	Mar ?	2 observed	Nores & Yzurieta (1980)
Laguna del Viborón	ME, Argentina	32°53'S, 68°36'W	Dec 1976	Immature male collected	Contreras (1979)
Vuelta de Obligado	BA, Argentina	33°35'S, 59°49'W	Sep 1998	1 alternate and 2 basic observed	Ferrari & Henschke (2002)
Costanera Sur	BA, Argentina	34°36'S, 58°27'W	Oct 2000	1 alternate and 1 basic observed	Ferrari & Henschke (2002)
Parque Provincial Llancanelo	ME, Argentina	35°35'S, 69°09'W	Apr 1984	1 alternate observed	Martínez *et al.* (1985)
Punta Rasa	BA, Argentina	36°17'S, 56°47'W	Jan 1970; Dec 1991; Dec 1992	?; 1 basic observed	Narosky (1971), Jaramillo (2000)
General Lavalle	BA, Argentina	36°24'S, 56°58'W			Narosky & Di Giácomo (1993)
Albufera Mar Chiquita	BA, Argentina	37°37'S, 57°24'W			Narosky & Di Giácomo (1993)
Mar del Plata	BA, Argentina	38°00'S, 57°33'W			Narosky & Di Giácomo (1993)
Near Santiago	SM, Chile				Bullock (1949); Jaramillo (2005)

in alternate plumage (plumages *sensu* Burger, 1996b; Howell & Dunn, 2007) that, judging from the date of the record, probably over-wintered in South America (see Lima *et al*., 2010, p.204, 205). Immature birds are vagrancy prone, and species with delayed maturation, like *L. atricilla*, may remain on their wintering grounds until first breeding (Berthold, 1993; Burger, 1996b). Correct aging of extra-limital individuals based on plumage characteristics, especially those in alternate plumage, and a sound knowledge on the timing of moult and migration, are necessary to unravel this situation.

Birds observed in eastern Brazil are probably "overshooters" (*sensu* Gilroy & Lees, 2003) – migrating individuals that extrapolated their non-breeding areas in northern South America and ended up well beyond their normal range. Furthermore, the Trindade Is. record suggests that at least some vagrants recorded in the Old World could have crossed the Atlantic from South America, traveling up the coasts of Africa to Europe, as Cottridge & Vinicombe (1997) and Fraser *et al*. (2007) proposed for *Leucophaeus pipixcan* (Wagler, 1831) in the British Isles (see below).

Franklin's Gull *Leucophaeus pipixcan* (Wagler, 1831). This North American inland species breeds in Canada from British Columbia to Alberta, and in the United States of America from Montana to Minnesota, with scattered populations in the northern Rocky Mountains and the Great Basin (Burger & Gochfeld, 1996; Howell & Dunn, 2007). After breeding, it migrates through the United States of America across Mexico to the Pacific coast, spending the boreal winter on the western coast of South America (Harrison, 1983; Burger & Gochfeld, 1996; Howell & Dunn, 2007). On its non-breeding grounds this gull is very common on sandy beaches, ports, river mouths and cultivated fields along the coast from Ecuador to central Chile, rarely to Tierra del Fuego (Burger & Gochfeld, 1996). The species is common in lakes in the Andes and vicinities, especially in Argentina (Burger & Gochfeld, 1994, 1996). This highly vagrant gull has been recorded in Europe, Africa, Israel, Marion Island, Australia, Japan, China, Hawaii and other islands in the Pacific, the Caribbean, French Guyana, Brazil, Paraguay, Patagonia, Tierra del Fuego, and South Georgia, South Sandwich, Gough, and Tristan da Cunha Islands (Harrison, 1983; Tostain & Dujardin, 1988; Burger & Gochfeld, 1994, 1996; Sick, 1997; Reid, 1998; Marin & Couve, 2001; Smith, 2002; Almeida, 2003; Imberti, 2003; Olsen & Larsson, 2003; Guyra Paraguay, 2005; Holt, 2005; BirdLife International, 2009). The first Brazilian record refers to an adult bird seen on the island of Fernando de Noronha in May 1988 (Antas *et al*., 1988), but the identification was later questioned due to the lack of documentation and possible confusion with the more common *L. atricilla* (Nacinovic & Teixeira, 1989). However, Schulz-Neto (2004a) apparently accepted this record and included the species in his list for the archipelago. A second record based on the observation of an adult in winter plumage was made on 15 March 1994 in the lower Japurá river, state of Amazonas (Pacheco, 1995). A bird in second-winter plumage photographed on 7 September 2002 off the coast of southern São Paulo state constitutes the first documented record for the species in Brazil (Almeida, 2003).

On 6 April 1999 *ca*. 16:30 h, L.B. observed through

binoculars and a scope an individual of this species amidst a large group of *C. maculipennis*, *Larus dominicanus* Lichtenstein, 1823, *Sterna hirundo* Linnaeus, 1758, *Sterna trudeaui* Audubon, 1838, *Thalasseus acuflavidus* (Cabot, 1847) and some Scolopacidae, on a sandy beach (32º09'33''S, 52º04'57''W) of the mouth of the Lagoa dos Patos at the base of the eastern jetty (Molhe Leste), São José do Norte municipality, Rio Grande do Sul. The diagnostic partial black hood, white forehead, throat and eye-ring, dark-grey mantle, and dark bill and legs were noted and allowed identification in the field. Considering the timing of the molt (*sensu* HOWELL & DUNN, 2007), the bird was probably in first alternate plumage. This was the only record in 44 visits to the area from March 1999 to November 2000, plus 48 visits from 2002 to 2004 in a larger area at the mouth of Lagoa dos Patos.

An adult in alternate plumage (*sensu* HOWELL & DUNN, 2007) was observed and photographed (Fig. 4) by L.B. at Praia do Andradas (20º30'51''S, 29º18'23''W), Trindade Island, Brazil, on 25 March 2007. The bird was feeding on dead triggerfish and flies around carcasses on the beach. This was the sole record in five months of fieldwork on the island between December 2006 and April 2007.

On 11 January 2009 *ca*. 16:00 h an individual in non-breeding plumage was observed by R.A.D. and Vânia M. Teixeira at the seaside resort of Cassino, Rio Grande municipality, Rio Grande do Sul. The bird was resting on the beach with a small flock of *C. maculipennis* at 32º10'57''S, 52°08'48''W, near the mouth of a small creek that drains the adjacent urban area. The gulls were quiet and tame, preening occasionally and allowing observation at close range from a car. The dark-grey mantle, ash colored partial hood, wide white forehead, throat and nape, marked white eye-ring, red tipped bill and white crescents on the scapulars and tertiaries distinguished it from the other gulls and were promptly noticed. After recording these distinctive characteristics, the observers left for a camera and binoculars, returning 10-15 min later. The bird, however, was no longer found. Intensive searches were conducted by car along a 10 km stretch of oceanic beach until *ca*. 18:00 h, but the bird was gone. Five additional surveys during January and early February also yielded negative results. On 26 April 2009, R.A.D., A. Gianuca and D. Gianuca (D.G.) found a dark-mantled gull resembling the above described individual at Cassino *ca*. 11:45h. The bird was standing amidst a loose group of *C. maculipennis* at the swash zone immediately south of the resort at coordinates 32º13'34''S, 52°11'56''W. It was approached by car and photographed at close range (Fig. 5). In flight, the conspicuous white trailing edge of the wing and the black primaries with white tips were clearly noticed (Fig. 6). The small amount of white separating the dark primaries from the gray upperwing suggests a bird in second basic plumage (*sensu* HOWELL & DUNN, 2007).

It is difficult to judge if the same individual was observed on both occasions. In this species, the third cycle pre-alternate molt starts in December and proceeds until April (HOWELL & DUNN, 2007). Second cycle birds may retain white flecking in black hood even in alternate plumage (HOWELL & DUNN, 2007), so a complete and fast darkening of the head is not expected from early January to late April. Since the January bird displayed a somewhat whiter forehead and throat than the specimen observed in April, the molt sequence is consistent with the hypothesis of the same individual being observed on both occasions. The fact that the records were made in the same locality further corroborates this hypothesis, despite a four-month hiatus and intensive searches between both records.

An additional record for northern coastal Rio Grande do Sul was made by C. E. Agne and A. B.-Silveira on a sandy beach at 30º07'05''S, 50º10'45''W, Cidreira municipality. An adult in alternate plumage (*sensu* HOWELL & DUNN, 2007) was observed and photographed on 30 May 2010 resting on the beach alongside *L. dominicanus*, *T. acuflavidus* and *Thalasseus maximus* (Boddaert, 1783). This was the only record in six months of fieldwork from March 2010.

Our records are the first for Trindade Is. and Rio Grande do Sul. Considering that there are only two records along the entire Atlantic seaboard of Brazil, Uruguay and Argentina (ALMEIDA, 2003; IMBERTI, 2003), and that similar sized gulls, namely *C. cirrocephalus* and *C. maculipennis*, are known from these areas (ESCALANTE, 1970; VOOREN & CHIARADIA, 1990; NAROSKY & DI GIÁCOMO, 1993; BELTON, 1994; ROSÁRIO, 1996; ARBALLO & CRAVINO, 1999; AZPIROZ, 2001; OLMOS & SILVA E SILVA, 2001; NAROSKY & YZURIETA, 2003; BRANCO, 2004, 2007; NEVES *et al.*, 2006; COSTA & SANDER, 2008; ROCHA, 2008; BARBIERI & MENDONÇA, 2008), we conclude that our observations are more parsimoniously attributed to vagrancy than pseudo-vagrancy.

Mar Chiquita and other lakes in Córdoba and Mendoza, Argentina – the only sites east of the Andes were the species is relatively common (NORES & YZURIETA, 1980; MARTÍNEZ *et al*., 1985; BLANCO & CARBONELL, 2001; NAROSKY & YZURIETA, 2003; CHEBEZ, 2009) – are the probable source of birds found in southern Brazil. Vagrants in South America east of the Andes may cross the cordillera from the altiplano, enter the continent via the Caribbean during their southward migration, or move around the southern tip of South America. HOWELL & DUNN (2007) stated that Andean and Caribbean records tend to be concentrated from September through December, which seems to be in accordance with the first two hypotheses. The rarity of this gull in southern Chile and Argentina (CLARK, 1986; IMBERTI, 2003; JARAMILLO, 2005; CHEBEZ, 2009) makes the last scenario less probable.

Vagrant *L. pipixcan* in Europe possibly originate in the Southern Hemisphere, traveling up the Atlantic after wintering in Africa (COTTRIDGE & VINICOMBE, 1997; FRASER *et al*., 2007). Birds may cross the Atlantic from northern South America, where vagrants are frequent (TOSTAIN & DUJARDIN, 1988; Olivier Tostain, pers. comm.), or even from North America in the wake of hurricanes, as FRASER *et al*. (2007) demonstrated. On the other hand, records from southern and southeastern Brazil suggest that birds may reach Africa after crossing the southern Atlantic Ocean, or vice-versa. Wind patterns in the Atlantic Ocean favor the dispersal of Palearctic and Ethiopian birds into the New World at low latitudes, whereas vagrants of South American origin usually

appear in southern Africa (Sick, 1983; Bencke *et al*., 2005). This gull is a strong flyer and has been frequently recorded in oceanic waters far from the coast (Almeida, 2003; Álvaro Jaramillo, pers. comm.). Therefore, the species seems capable to perform transoceanic crossings from southern South America to southern Africa aided by the westerlies, or even northern South America and the Caribbean to the Old World against the prevailing trade winds.

Brown Noddy *Anous stolidus* (Linnaeus, 1758). Breeds in tropical and subtropical islands in the Atlantic, Indian and Pacific Oceans (Harrison, 1983; Gochfeld & Burger, 1996). Breeding colonies in the Atlantic range from the Caribbean south to islands off Brazil and east to Ascension, Santa Helena, Tristan da Cunha and Inaccessible Islands, and in islands off Africa from the Gulf of Guinea to Cameroon (Gochfeld & Burger, 1996). Brazilian breeding colonies are known from São Pedro and São Paulo Rocks, Atol das Rocas, Abrolhos, Fernando de Noronha, and Trindade Islands (Antas, 1991; Branco, 2004). Records along the Atlantic coast of South America are more frequent in northeastern Brazil, especially in the vicinity of breeding colonies (Tab. I). There are fewer records to the south. A bird of the genus *Anous* recently recorded in Uruguay has been identified as *A. stolidus* (Abente *et al*., 2010; Adrián Azpiroz, pers. comm.).

Figure 4. Adult Franklin's Gull *Leucophaeus pipixcan* (Wagler, 1831) in alternate plumage recorded at Praia do Andradas, Trindade Island, Brazil, on 25 March 2007. Photograph by Leandro Bugoni.

On 27 January 2005 a moribund individual of this species that had landed on a ship a few days before at an untraced locality off the littoral of Rio Grande do Sul was taken by the staff of CRAM (Centro de Recuperação de Animais Marinhos), a sea life rehabilitation center maintained by the Universidade Federal do Rio Grande (FURG) at the city of Rio Grande, Rio Grande do Sul. The bird died and its skin was later incorporated to the bird collection at FURG (number 427). The unsexed specimen was examined by R.A.D., L.B. and D.G. Bill depth and tarsus were smaller than the mean and near the lower limit reported for birds from the Caribbean and tropical Atlantic Ocean, while the exposed culmen and middle toe with claw were close to the mean for females from these populations (measurements from Chardine & Morris, 1996). The wing was also shorter, but the three outer primaries were much worn. Primary #7 was growing and the rest of the inner primaries were new. White on the head was restricted to a thin line stretching from the bill to the eye, and the whitish-grey wash was confined only to the forehead (Fig. 7). Despite worn, pale margins were visible on the scapulars. Based on these features and the fact that the bird was collected during the austral summer, when South Atlantic populations are breeding, we conclude that the specimen was immature, finishing its first or second pre-basic molt (in comparison to descriptions and measurements in Chardine & Morris, 1996).

Additionally, L.B. observed and photographed an individual that perched and remained for several minutes on the R/V Atlântico Sul on May 2002, off the coast of Rio Grande do Sul, in front of Mostardas municipality. The shore was at visual range.

The first mention for the state was made by Ihering (1888), who reported a black-brown tern that he could not collect and that could only have been *A. stolidus*. Nascimento (1995) later mentioned a dead bird found at the mouth of the Lagoa do Peixe in April 1992. Despite the discrepancy regarding the collecting date, a skeleton in the collection of the Museu de Ciências Naturais of the Fundação Zoobotânica do Rio Grande do Sul (MCN

Figures 5, 6. Non-breeding Franklin's Gull *Leucophaeus pipixcan* (Wagler, 1831) recorded on 26 April 2009 at Praia do Cassino, Rio Grande do Sul, Brazil. The small amount of white separating the dark primaries from the gray upperwing suggests a bird in second basic plumage. Photographs by Andros Gianuca.

267) collected at this exact locality in March 1992 probably refers to Nascimento's specimen and constitutes the first documented state record (BENCKE, 2001).

The lack of observations of *A. stolidus* in southern Brazilian waters (NEVES *et al*., 2006) indicates that records for southern Brazil and Uruguay are more parsimoniously attributed to vagrants. The species disperses to the open ocean after breeding, rarely straying out of warm waters (CHARDINE & MORRIS, 1996; GOCHFELD & BURGER, 1996). It is present most of the year near tropical breeding colonies, but seasonally absent from subtropical ones, such as Tristan da Cunha (HARRISON, 1983; GOCHFELD & BURGER, 1996). The considerable number of records of young individuals in the Brazilian littoral suggests that vagrants may refer to inexperienced or exhausted non-breeding birds blown off the course.

Black Noddy *Anous minutus* Boie, 1844. Breeds in tropical and subtropical islands in the Caribbean, central Atlantic, western and central Pacific, and northeastern Indian Oceans (GAUGER, 1999). Brazilian breeding colonies are known from São Pedro and São Paulo Rocks, Atol das Rocas, Fernando de Noronha and Martin Vaz Islands (ANTAS, 1991; GAUGER, 1999). Reports for Trindade Island (ANTAS, 1991) are equivocal (see below). Other colonies in the Atlantic are found in Ascension, Santa Helena and the Gulf of Guinea (GAUGER, 1999). The only records for the Brazilian coast are from the states of Ceará and São Paulo (GIRÃO *et al*., 2008; BARBIERI *et al*., 2010).

From 2–4 April 2007 L.B. observed a tiny breeding colony, not over a dozen nests, on a cliff on the northern face of Ilha do Norte (20º28'06''S, 28º51'17''W), Martin Vaz archipelago. The colony was characteristic, nests consisting of small elevations on a protected rocky shelf smeared with guano. The species was positively recorded only at this locality, although small groups of unidentified *Anous* were seen fishing nearby at sea. The diagnostic smaller size, blackish-brown plumage and whiter crown in comparison to *A. stolidus* (HARRISON, 1983) were noticed. The species was not recorded by L.B. during almost six months of fieldwork at Trindade Is., 45 km west of Martin Vaz.

Our observations confirm that *A. minutus* persists on Martin Vaz. The first mention of this species for the region was made by NICOLL (1906), who sighted an individual at Martin Vaz islets on 5 January 1906 (identified as *Micranous leucocapillus*). An observation of what probably was this species nesting at Martin Vaz was later mentioned in ROCKWELL (1932). LUIGI & NACINOVIC (1997) observed a breeding colony with about 30 nests on 25 November 1993, identifying the species as *Anous tenuirostris* (considered synonym with *A. minutus*). Based on their description, the breeding colony was located at the same place where we observed it.

ANTAS (1991) and GIRÃO *et al*. (2008) reported that there are no recent breeding records of the species for Trindade. However, as OLSON (1982) stated, there is no evidence that *A. minutus* ever occurred at Trindade. FONSECA-NETO (2004) correctly emphasized that reports of this species for Trindade Is. are erroneous and based on a misinterpretation of Nicoll's record for Martin Vaz. The absence of records for Trindade (NICOLL, 1906; ROCKWELL, 1932; OLSON, 1982; FONSECA-NETO, 2004; our observations) suggests that breeding is restricted to Martin Vaz.

Poorly-understood, long-distance inter-island movements of individuals from sedentary populations of this species have been recorded (GAUGER, 1999). Since

Figure 7. Brown Noddy *Anous stolidus* (Linnaeus, 1758) (specimen FURG 427) captured off the coast of Rio Grande do Sul and brought to a wildlife rehabilitation center at Rio Grande, Rio Grande do Sul, Brazil, on 27 January 2005. Note the limited amount of grayish-white on the head, indicating a young bird. Photograph by Dimas Gianuca.

the 45 km that separate Trindade from Martin Vaz pose no obstacle to the dispersal of this bird, it is possible that some individuals visit Trindade and escape identification due to large numbers of *A. stolidus* occurring there. We recommend careful identification of noddies at Trindade to solve this matter.

It is intriguing how this tiny population managed to persist on an islet in the mid-Atlantic for at least one-hundred years. Studies on its breeding biology, nesting site fidelity and movements are badly needed.

Black Tern *Chlidonias niger* (Linnaeus, 1758). This species has two disjunct populations in the Northern Hemisphere recognized as subspecies: *C. n. niger* breeding in Eurasia from southern Scandinavia to southern Spain and east to Lake Balkhash and Altai; and *C. n. surinamensis* across North America from the Northwest Territories and British Columbia in Canada south to California and New England in the United States of America (Harrison, 1983; Dunn & Agro, 1995; Gochfeld & Burger, 1996). Palearctic populations winter mainly in western Africa, from Mauritania to Namibia and occasionally South Africa, whereas North American birds migrate along the Pacific to Mexico and Panama south to Peru, and through the Gulf of Mexico and the Caribbean to the coasts of Panama and Colombia east to French Guiana (Dunn & Agro, 1995; Gochfeld & Burger, 1996). In South America it is considered rare/accidental in Chile, Argentina, Uruguay and Brazil (Dunn & Agro, 1995; Gochfeld & Burger, 1996) (see Table I for a summary of records).

On 23 March 1999 L.B. observed through binoculars and a telescope an individual in basic plumage among a large group of *C. maculipennis*, *L. dominicanus*, *Sternula superciliaris* (Vieillot, 1819), *S. hirundo*, *S. trudeaui* and *T. acuflavidus* on a sandy beach (32º09'33''S, 52º04'57''W) of the mouth of the Lagoa dos Patos at the base of Molhe Leste, São José do Norte municipality, Rio Grande do Sul. Another individual in basic plumage was observed by L.B. amidst a group of *S. superciliaris* on 10 May 2002 at Praia do Cassino, Rio Grande municipality, Rio Grande do Sul, at 32º09'39''S, 52º05'5''W. The small size, round head, slender, delicate bill and the diagnostic dark smudges on sides of breast in front of wings (Dunn & Agro, 1995; Olsen & Larsson, 1995) were noticed and allowed identification. These are the first records for the estuarine region of the Lagoa dos Patos.

Brazilian records come mainly from the northeastern and southern sections of the littoral. The species has not been recorded during inventories carried out in localities dispersed throughout the Brazilian littoral (*e.g.*, Vooren & Chiaradia, 1990; Olmos & Silva e Silva, 2001; Branco, 2004, 2007; Araújo *et al*., 2006; Cabral *et al*., 2006; Lima, 2006; Barbieri & Mendonça, 2008; Souza *et al*., 2008), with the exception of northern Rio Grande do Sul (Costa & Sander, 2008). Small terns, especially *S. superciliaris*, were recorded in many of these localities, suggesting that *C. niger* is genuinely rare in Brazil.

There is an unusual concentration of records from Lagoa do Peixe, southern Brazil, as inferred from a personal communication of Scherezino Scherer to Bencke (2001, p.63) stating that the species had been captured and banded at this locality on many occasions from 1986 onwards during banding campaigns carried out by CEMAVE (a governmental bird banding organization where S. Scherer worked). However, based on a recent analysis of all CEMAVE banding information from this site from 1984 to 2008 (Simão & Serafini, 2010; Isaac Simão, pers. comm.), the only banding campaign record for Lagoa do Peixe refers to a bird captured in October 1991. Therefore, or additional captures occurred during banding campaigns carried out by other institutions (I. Simão, pers. comm.) – an unlikely hypothesis since Bencke (2001) states that captures were made by CEMAVE staff, and because CEMAVE was the major institution banding birds at Lagoa do Peixe – or the information provided by S. Scherer is equivocal. In light of this new information, the only confirmed record for Lagoa do Peixe other than the abovementioned October 1991 capture is a sighting of a bird in alternate plumage made by Suzana M. Lara-Resende on 9 June 1986 and reported in Resende & Leeuwenberg (1987) and Belton (1994).

Neighboring Uruguay and Argentina also hold several records, which is quite surprising since the main area of occurrence of *C. n. surinamensis* during the non-breeding season is in the Northern Hemisphere. The only South American region where this tern is abundant is the coast of Colombia, especially along the Pacific (Hilty & Brown, 1986). It is uncommon along the Peruvian coast, and rarely recorded inland in the Amazon and Andean lakes (Hilty & Brown, 1986; Hilty, 2003; Schulenberg *et al*., 2007). There are no records for Paraguay (Guyra Paraguay, 2005) or Bolivia (Mayer, 2009).

The origin of birds recorded in Argentina, Uruguay and Brazil is intriguing. Nearly half of the records for these countries are for the austral spring, suggesting that vagrants originate during the southbound migration. They may be "over-shooters" (*sensu* Gilroy & Lees, 2003): true vagrants from North America that extrapolated their wintering areas and ended up in the Southern Hemisphere. Furthermore, some of these birds, especially those recorded in northeastern Brazil, may be of Palearctic origin, as inferred by the encounter in Rio Grande do Norte of a specimen banded in Berlin (Sick, 1997). A series of Old World species have been recorded from oceanic islands off northeastern Brazil (Soto & Filippini, 2003; Branco, 2004; Bencke *et al*., 2005; Silva e Silva & Olmos, 2006), their dispersal to South America facilitated by trade-winds (Sick, 1983; Bencke *et al*., 2005; see above). It is also possible that Palearctic individuals blown off-course to northeastern South America keep migrating south along the Brazilian coast as they would do in Africa, finally reaching coastal Rio Grande do Sul, Uruguay and Argentina. On the other hand, these southernmost records may refer to pseudo-vagrancy, being attributable to an unknown migratory population that spends the boreal winter in the wetlands of Argentina, Uruguay and Rio Grande do Sul. Careful observation and documentation of individuals recorded in southern South America is needed to enlighten the origin of these individuals.

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