

Status and distribution of the suborder Lari in Paraguay, including new country records

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Received on 04 April 2017. Accepted on 07 July 2017.

ABSTRACT: The Lari of Paraguay are poorly known and only three species in two families occur regularly (Large-billed Tern *Phaetusa simplex*, Yellow-billed Tern *Sternula superciliaris* and Black Skimmer *Rynchops niger*). However, recent field studies have revealed that diversity is much greater than previously thought, and several new species have been added to the country list in recent years. With many of these species being of only transient presence, the distribution and status of Paraguayan species is reviewed here including first reports of four species (Laughing Gull *Leucophaeus atricilla*, Franklin's Gull *Leucophaeus pipixcan*, Gull-billed Tern *Gelochelidon nilotica*, and Whiskered Tern *Chlidonias hybrida*) and one subspecies (Black Skimmer *Rynchops niger cinerascens*). The first South American record of the Whiskered Tern *Chlidonias hybrida* is remarkable coming from a country in the center of the continent. Reports of three other species (Kelp Gull *Larus dominicanus*, Snowy-crowned Tern *Sterna trudeaui* and Royal Tern *Thalasseus maximus*) are discussed and treated as hypothetical. Basic breeding data is provided for three species (Large-billed Tern, Yellow-billed Tern and Black Skimmer), showing that clutch sizes fall within clutch size ranges of other studies.

KEY-WORDS: breeding biology, gull, Laridae, Rynchopidae, Black Skimmer, Sterninae, Tern, vagrant.

INTRODUCTION

The suborder Lari is comprised of the families Laridae (including the subfamily Sterninae), Rynchopidae, Stercorariidae, Alcidae, Dromadidae and Glareolidae (Burger & Gochfeld 1996, Remsen-Jr. *et al.* 2017). Two of these families occur in Paraguay, the Laridae and Rynchopidae (del Castillo & Clay 2004). Despite the presence of major river systems and extensive wetlands in the country (occupying about 40% of Paraguay, Clay *et al.* 2004) just three representatives of these two families are common and widespread.

Félix de Azara (1805) was the first to report the presence of species of Lari in Paraguay. He reported two species of gull (“la cenicienta” and “la blanca”), various terns representing two species and Black Skimmer *Rynchops niger* (“el rayador”). It was then over 180 years until the next new species was documented as occurring in the country, the Arctic Tern *Sterna paradisaea* (Hayes 1995). Much new data have become available since then and we here provide a complete overview of the current state of knowledge of the species of Lari in Paraguay, including the first documentation of four species and one subspecies.

METHODS

Records of gulls and terns in Paraguay were compiled from the published literature, museum specimens, on-line databases *e.g.* Worldbirds (<http://www.worldbirds.org>) and eBird (<http://www.ebird.org>), the Guyra Paraguay Biodiversity Database, the authors' own field observations and through consultations with ornithologists and birdwatchers. Abbreviations used in the text are: dept. – *departamento* (a geopolitical division of Paraguay); RMNH – Rijksmuseum van Natuurlijke Historia (Leiden, Netherlands); UMMZ – University of Michigan Museum of Zoology (Ann Arbor, USA). Nomenclature follows the South American Classification Committee (Remsen-Jr. *et al.* 2017).

RESULTS

Species accounts

Rynchops niger: Black Skimmer is a common species along most of the major rivers throughout Paraguay, and in associated wetland areas, including rice fields (at least occasionally). While the species is generally rare away from

the major rivers, it can be quite numerous when conditions are appropriate (*i.e.* abundant freshwater); for instance, 150 were observed at Laguna Lucero (22°33'S; 59°26'W) (within the Yacaré Sur watershed in the central Chaco) during flood conditions in July 2012 (R.P.C. & P.S.). This watershed, along with Estero Patiño (24°05'S; 59°55'W) in the Pilcomayo watershed, form the westernmost limits of the species' normal distribution in Paraguay, though there are records from further west (*e.g.* 1 at Mariscal Estigarribia 22°02'S; 60°36'W, on 20 July 1990, by A. Madroño-Nieto, and 1 at Pozo Hondo 22°18'S; 62°31'W, on 13–15 November 2003, by E. Coconier).

During river surveys carried out between 14–15 and 26–27 October 2004 a total of 49 Black Skimmer nests were found in 19 colonies along 675 km of the Paraguay River between Concepción (23°25'S; 57°17'W) and Paso de Patria (27°13'S; 58°35'W). The number of eggs per nest varied from 1 to 5, with a mean of 3.04 eggs (A.J.L.). On 30 September 2007, 10 nests were found in a mixed colony situated in a sand dune on Isla Yacyretá (27°30'S; 56°16'W), Itapúa dept. Here, clutch size varied from 1 to 4 eggs and the mean was 3.2 eggs. These data are consistent with those from studies in the United States and Brazil where clutch size also varied from 1–5 eggs (mean 2.70–3.55) (Erwin 1977, White *et al.* 1984, King & Krynsky 1986, Custer & Mitchell 1987, Krannitz 1989 & Molina 1996).

Most Paraguayan skimmers, including all birds that have been reported breeding, belong to the subspecies *intercedens* Saunders, 1895. This subspecies has white underwing coverts, a broad white border to the secondaries and innermost primaries, and greyish-white tail feathers (apart from the dark central pair). However, in recent years, birds of the northern South American subspecies *cinerascens* Spix, 1825 have also been recorded in the country. This subspecies has darker, greyish underwing coverts, a much narrower white border to the secondaries (barely apparent, and not extending onto the inner primaries), and the tail feathers are more uniformly sooty grey (Wetmore 1944).

In addition to describing adult and immature plumages of *intercedens*, de Azara (1805) refers to “other individuals...without white tips to those feathers (the secondaries). Furthermore, the underside of these feathers and the coverts is dark” (translated from the Spanish). Though long overlooked, these would appear to describe the first records of *cinerascens* for Paraguay as noted by Saunders (1806). In addition, Bertoni (1930) noted “inconsistencies in the subspecific descriptions” which may also be a reference to birds of the subspecies *cinerascens*.

The first modern record of *cinerascens* occurred during waterbird monitoring along the Paraguay River in October 2004; one individual was observed by A.J.L.

among a flock of *intercedens* on 26 October 2004. On 20 January 2005, one adult *cinerascens* in non-breeding plumage was observed at the Bahía de Asunción (25°20'S; 57°35'W), Central dept. by R.P.C. and A.J.L. Since then, there have been occasional records of small numbers (usually one to three) *cinerascens* with flocks of *intercedens* at this same locality (R.P.C., A.J.L., Sergio Rios), with a high count of at least 9 seen on 23 January 2015 with a single *intercedens*. The first Chaco record is of at least three amongst a flock of *intercedens* at Chaco Lodge (22°32'S; 59°18'W), Presidente Hayes dept. on 21 September 2015 (R.P.C. & P.S.).

Using satellite telemetry, Davenport *et al.* (2016) documented an 1800 km southeast movement of a *cinerascens* from a breeding site on the Manu River in Amazonian Peru, to the vicinity of Fuerte Olimpo, Alto Paraguay dept., Paraguay, suggesting a potential origin for birds recorded in Paraguay.

Chroicocephalus maculipennis: Bertoni (1919) claimed the first record of the Brown-hooded Gull for Paraguay, a now lost specimen that was collected by his brother Werner during July 1916 at Puerto Bertoni, Alto Paraná dept. (25°39'S; 54°36'W). Though there have been no further records of the species in the country, it seems that Bertoni overlooked several previous reports.

Storer (1989) reported a first-year female (UMMZ 1647a) collected by W. Foster at Sapucay (25°40'S; 56°55'W), Paraguari dept. on 17 August 1901 (not 1907 as given in that publication). He also noted the existence of two further specimens collected in 1863, one breeding adult and a young bird beginning to acquire nuptial plumage (Schlegel 1863) which Hayes (1995) suspected may have been collected outside of the boundaries of modern day Paraguay. A third specimen listed by Schlegel (1863) with “grey head” is an adult *C. cirrocephalus* (F. Mees, pers. comm. in Storer 1989). Schlegel treated *maculipennis* as a synonym of *cirrocephalus*.

Additionally, and following Saunders (1806), we refer de Azara's (1805) description of “la blanca” to this species. There are two populations of *C. maculipennis*: a “white-winged” form breeding on the Pacific coast of southern South America, and a “spot-winged” population on the Atlantic side of southern South America, north of Patagonia (Murphy 1936). De Azara's description is inconsistent with *C. cirrocephalus* (as noted by Hartlaub 1847) but closely fits “spot-winged” *C. maculipennis*, which would seem the most likely population (geographically) to occur in Paraguay. He noted flocks of up to 12 birds, in wet meadows with a lot of grass, rather than along rivers and lagoons. He described the birds thus: “The whole body is white with the wings ashy-white; but the first two primaries are black with a white shaft and sub-terminal spot. The next three primaries have the tip and the inner web dark, and the outer web

white. The other primaries are similar, with a small white tip.” (translated from Spanish).

The complete absence of modern records of *C. maculipennis* is of great interest, and this may be attributable to the more coastal habitat preference of that species. However recent sight reports of the species close to the Paraguayan border in Argentina at Laguna Yema (24°15'S; 61°14'W), Formosa province (16 May 2013; N. Oste, D. Almiron, J. Ubiría & C. Agulian); Puerto Iguazú (25°36'S; 54°34'W), Misiones province (7 December 2013; V. Sandage); and Laguna Iberá (28°32'S; 57°16'W), Corrientes province (1 September 2005; J. Ubiría) all suggest that future records are likely with increased field effort. Given the paucity of records currently available we consider the species a rare vagrant to Paraguay.

Chroicocephalus cirrocephalus: Grey-headed Gull is a relatively common species in southern South America, occurring along the Pacific coast of Ecuador and Peru, discontinuously along the Atlantic from north-east Brazil south to Argentina, and inland along river systems including the lower Paraná River (Burger & Gochfeld 1996, Lees *et al.* 2014). De Azara (1805) reported that he had never seen “la cenicienta” (referring to *C. cirrocephalus*) but had heard of a year in which they were very abundant, arriving from the south. Hayes (1995)

considered the species to be a rare austral migrant to Paraguay. Contrary to the statement in Dwight (1925; possibly the source of a similar statement in Harrison 1985), there is no evidence of the species ever having bred in the country.

One of the three gull specimens collected at an unspecified locality (possibly outside of Paraguay) in 1863 is an adult *C. cirrocephalus cirrocephalus* (Schlegel 1863, Storer 1989, RMNH 46021). Other than this, the first documented record undoubtedly within the current borders of Paraguay are two females collected by H.E. Bender 120 km SE of Orloff, Presidente Hayes dept., on 1 September 1940 (Storer 1989; USNM 571,351 and 571,352). Storer (1989) speculated that the specific locality for these specimens was the salt lake at Laguna Salada (22°34'S; 59°20'W).

Ten birds reported from along the Paraguay River between 18 October and 4 November 1984 (López 1985) and a report lacking details from Misiones dept. (Contreras *et al.* 1989) were treated as hypothetical by Hayes (1995) and del Castillo & Clay (2004), but are within the realms of possibility.

Since 1990, there have been an additional 15 records, 13 of which are published here for the first time (Table 1). These include birds in both breeding (Fig. 1A) and non-

Table 1. Recent records of *Chroicocephalus cirrocephalus* in Paraguay.

Date	No. individuals	Plumage	Locality (Latitude; Longitude)	Department	Observer/Reference
July 1990	2		Villeta (25°28'S; 57°36'W)	Central	J. Escobar
January 1992	1		2 km north of Isla Umbú (27°00'S; 58°26'W)	Ñeembucú	Contreras <i>et al.</i> (2014)
5 November 1994	1		Asunción (Bahía de Asunción)	Central	J. Escobar
4 October 2004	2	Breeding	Asunción (Bahía de Asunción)	Central	P.S. & R. McCann
21 May 2005	1	Non-breeding	Asunción (Bahía de Asunción)	Central	C. Morales, S. Centrón, H. Cabral Beconi & R. Zarza
16 September 2005	3	Non-breeding	Fuerte Olimpo (21°2'S; 57°52'W)	Alto Paraguay	J. Escobar
11 January 2009	1	Non-breeding	Arroyo Aguapey (27°0'S; 56°17'W)	Itapúa	H. del Castillo
11 August 2009	1	Non-breeding	Asunción (25°16'S; 57°40'W)	Central	R.P.C.
13 September 2009	3	Breeding (2); immature	Asunción	Central	R.P.C.
7 October 2009	16	Intermediate	Arroyo Aguapey	Itapúa	J. Escobar (largest reported flock)
11 October 2011	11	At least 2 in breeding	Brazo Aña Cua (27°22'S; 56°40'W)	Itapúa	R.P.C., H. Swegen & B. Lorentzon
23 August 2012	2	Breeding	Carmen del Paraná (27°15'S; 56°10'W)	Itapúa	Roberto Derna
26 March 2013	1	Breeding	Laguna Blanca (23°44'S; 56°17'W)	San Pedro	Smith <i>et al.</i> 2016
3 February 2016	1	Breeding	Asunción	Central	R.P.C.
13 November 2016	1	Breeding	Yacyretá hydroelectric dam (27°29'S; 56°44'W)	Itapúa	R.P.C.

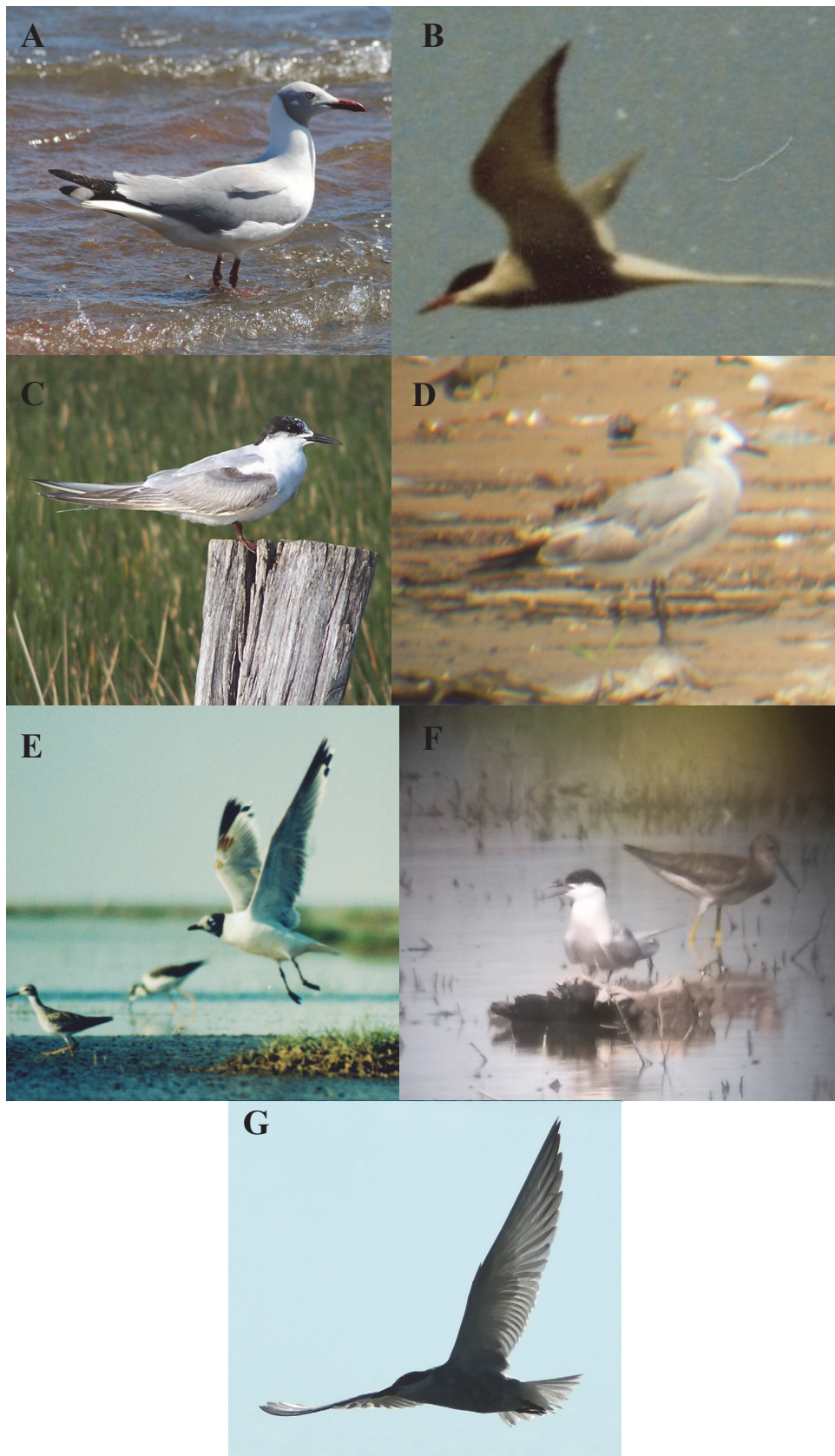


Figure 1. (A) *Chroicocephalus cirrocephalus*, Carmen del Paraná, dept. Itapúa (Photo author: R. Derna); (B) *Sterna paradisaea*, Bahía de Asunción, dept. Central (Photo author: F. Hayes); (C) *Sterna hirundo*, Laguna Blanca, dept. San Pedro (Photo author: P. Smith); (D) *Leucophaeus atricilla*, Bahía de Asunción, dept. Central (Photo author: M. Coath); (E) *Leucophaeus pipixcan*, Laguna Sanidad, dept. Presidente Hayes (Photo author: A.J. Lesterhuis); (F) *Gelocheidon nilotica*, Laguna Capitan, dept. Presidente Hayes (Photo author: A.J. Lesterhuis); (G) *Chlidonias hybrida*, Estancia Graciela, dept. Misiones (Photo author: H. Faithfull).

breeding plumage, as well as at least one immature. The species seems to be a regular vagrant in Paraguay and may be more numerous in some years than others.

Sternula superciliaris: Yellow-billed Tern is fairly common along the major rivers in Paraguay but is rather rare away from them. The farthest west the species has been recorded is on the lagoons of the Yacaré Sur watershed (22°33'S; 59°23'W) in the central Chaco, and the Estero Patiño wetlands associated with the Pilcomayo River (R.P.C., A.J.L., H. del Castillo). Yellow-billed Tern nests in colonies with both Large-billed Tern *Phaetusa simplex* and Black Skimmer along the Paraguay River and the lower reaches of the Paraná River (from the Yacyretá dam to the confluence with the Paraguay River). Colonies are located on sand banks and sandy beaches of islands, with breeding activity from August to December. During river surveys carried out between 14–15 and 26–27 October 2004, a total of 155 Yellow-billed Tern nests were found in 19 colonies along 675 km of the Paraguay River between Concepción (23°25'S; 57°00'W) and Paso de Patria (27°15'S; 58°33'W). The number of eggs per nest varied from 1 to 4, with a mean of 2.02 eggs (A.J.L.). On 30 September 2007, 13 nests were found in a mixed colony situated in a sand dune on Isla Yacyretá, Itapúa dept. (27°25'S; 56°49'W). Here the number of eggs varied from 1 to 3 and the mean was 2.7 eggs (A.J.L.). Krannitz (1989) reported a mean clutch size of 1.94 eggs and a range 1–3 eggs for 16 nests in Brazil.

Phaetusa simplex: Large-billed Tern is a common species along the major rivers and in associated wetlands, including (and perhaps increasingly) rice fields. The highest count is of 848 birds going to roost on the 4 November 2016 seen from Parque Solidaridad (25°16'S; 57°39'W, on the banks of the Paraguay River) by R.P.C. Though generally uncommon away from major rivers, it can become quite numerous when conditions are appropriate (*i.e.* abundant freshwater). For instance, the species is periodically abundant at the saline lagoons of the Yacaré Sur watershed in the central Chaco, *e.g.* 300–500 birds at various lagoons in July 2012 (R.P.C. & P.S.) which coincided with extensive fresh and brackish water flooding in the watershed. The Yacaré Sur watershed and the Estero Patiño wetlands of the Pilcomayo River watershed (both Presidente Hayes dept.) form the western limit of the normal range of the species in Paraguay.

Large-billed Tern breeds in mixed colonies with Yellow-billed Tern and Black Skimmer on sand banks and sandy beaches of islands. Although a common bird (del Castillo & Clay (2004), to date only small breeding colonies have been found of this species. During a river survey on 26 and 27 October 2004 a total of five Large-billed Tern nests were found in five mixed colonies along 300 km of the Paraguay River between Concepción and Asunción (25°15'S; 57°37'W). The number of eggs per

nest varied from 2 to 3, with a mean of 2.6 eggs (A.J.L.). On 30 September 2007, one nest with 3 eggs was found in a colony with Yellow-billed Terns and Black Skimmers on a sand dune on Isla Yacyretá, Itapúa dept. Krannitz (1989) reported a mean clutch size of 2.3 from Brazil, based on 121 nests.

Sterna paradisaea: Hayes *et al.* (1990) recorded the Arctic Tern at the Bahía de Asunción, Central dept. on the 9 and 10 May 1989. Photos were deposited in VIREO and one is published here (Fig. 1B) for the first time. This record was the first of the species in the interior of South America.

Sterna hirundo: a winter adult Common Tern was photographed (Fig. 1C) and filmed on 17 and 18 September 2006 at Laguna Blanca, San Pedro dept. by P.S., and was also observed by H. del Castillo, Richard Smith and Kirti Chaudhurri (Smith & del Castillo 2006, Smith *et al.* 2016). It was identified based on the dark carpal bar, dark primaries, short tail, long black bill and flattened head. This represents the first record of Common Tern for Paraguay. Previous reports of the species in Paraguay (CDC 1995, 1997) are in error and refer to the first Paraguayan record of Arctic Tern which was initially misidentified as a Common Tern (del Castillo & Clay 2004). Common Tern has been reported from several inland localities in Argentina to the south of Paraguay (Mark Pearman, pers. comm.) and its occurrence in Paraguay as a vagrant or irregular passage migrant is unsurprising.

Leucophaeus atricilla: Laughing Gull breeds in the eastern United States and the Caribbean and winters in Central and South America (Burger & Gochfeld 1996). In South America it occurs along the Pacific coast as far south as northern Chile, and along the Atlantic coast to northeastern Brazil, occasionally as far south as Rio Grande do Sul (Burger 1996) and may be expanding its non-breeding distribution (Lima *et al.* 2010). It is considered primarily a coastal species and is only rarely observed inland (Lima *et al.* 2010).

On 2 February 2011, R.P.C., A.J.L. and Melanie & Dominic Coath observed a gull in a large flock of Large-billed Terns in the Bahía de Asunción (Fig. 1D). The bird was identified as a first-year Laughing Gull based on its relatively long bill, flattened forehead and elongated body, combined with grey wash on flanks and hind-neck, and mottled underwing, which distinguish the species from similar plumages of Franklin's Gull *Leucophaeus pipixcan* (Sibley 2000).

This represents the first record of the species for the country, and one of the southernmost records in South America. There is an undocumented report of a bird captured at Lagoa do Peixe (31°14'S; 50°57'W), Rio Grande do Sul, Brazil, in July 1985 (Sick 1993), but it was treated as requiring documentation by Bencke

(2001). Records of the species inland in South America are rare; previously published reports include three in Amazonas state, Brazil (Lima *et al.* 2010), one in western Amazonian Peru (O'Donnel & González 2003) and a handful of records from the western Amazon and Andes in Ecuador (Santander *et al.* 2011, Henry 2012).

Leucophaeus pipixcan: Franklin's Gull breeds in Canada and the United States, and winters along the Pacific coast of South America to southern Chile, also occurring in small numbers in Argentina from Córdoba to Chubut provinces, and rarely to Tierra del Fuego (Burger & Gochfeld 1996). In Bolivia it has been reported from La Paz, Cochabamba and Potosí depts. (Hennessey *et al.* 2003) and vagrants have reached Venezuela (Hilty 2003), French Guiana, both coastal and inland Brazil (Farias 2016), and Uruguay (Abreu 2015).

On 17 June 2004, A.J.L. photographed a dark-headed gull at Laguna Sanidad, Estero Patiño, Presidente Hayes dept. (Fig. 1E) that was also observed by H. del Castillo, M. de Bernard and M. Montiel. The bird was identified as a Franklin's Gull due to its blackish hood, prominent white eye crescents, dark grey upperwing and plain white underwings (Sibley 2000). The solid black wing tips, with some brown remaining on the secondaries and tertials indicated that the gull was in first summer plumage (Burger & Gochfeld 1996). This represents the first record of the species for Paraguay.

On 11 July 2007, a probable Franklin's Gull was observed by A.J.L. and S. Centrón at Campo María (22°34'S; 59°20'W) Presidente Hayes dept. The individual had an all black hood and in flight showed darkish grey upperwings with a white subterminal band. Unfortunately, the bird was seen only briefly before flying off. We consider this species a rare vagrant to Paraguay, though one which seems likely to occur again given that it winters in southern South American and its well-documented tendency to wander.

Gelochelidon nilotica: Gull-billed Tern breeds in southern Europe, northern Africa, central and east Asia, the southern United States, Mexico, the Caribbean and South America (Gochfeld *et al.* 2016a). Within the Americas, at least three subspecies breed, with North American breeding birds wintering as far south as Brazil and Peru (Gochfeld *et al.* 2016a). The subspecies *gronvoldi* has a disparate breeding distribution centered on the coast of the Guianan shield and southern coastal Brazil and the lower Paraná and Plata River Basins, where it is believed to be resident (Gochfeld *et al.* 2016a).

On 25 July 1999, H. del Castillo observed an adult Gull-billed Tern in non-breeding plumage at Laguna Sanidad, Estero Patiño, Presidente Hayes dept. On 3 July 2005, another non-breeding adult was found at the same locality by R.P.C., and seen later that day by H. del

Castillo, H. Cabral, S. Centrón, F. Fragano and L. López. Presumably the same bird was seen again, albeit distantly, on 4 July (R.P.C.). F. Fragano documented the record with a distant photograph. The bird was easily identified by the stocky, black gull-like bill, all pale crown, and smudgy blackish-patch on the ear-coverts. The upperparts, including the long wings, rump and tail, were very pale pearly-grey, and the tail was only shallowly forked. A bird in full breeding plumage was photographed by A.J.L. at Laguna Capitán (22°33'S; 59°42'W), Presidente Hayes dept. on 25 October 2014 (Fig. 1F).

These are the first documented records of the Gull-billed Tern in Paraguay. The species had been previously listed for Paraguay without details (CDC 1995, 1997). We consider the species a rare vagrant in Paraguay. Paraguayan records presumably refer to the southern South American population of *gronvoldi*: the three records reported here were of birds in the plumage expected for individuals from an austral breeding population, with non-breeding plumaged birds being recorded in the austral winter and a breeding plumaged bird during the austral spring (when northern birds would be expected to show the opposite plumages).

Chlidonias hybrida: Whiskered Tern has migratory populations that breed in southern Europe to central Asia, and in east Asia (wintering in northern and central Africa and southern Asia), with resident populations found in southern Africa, southern Asia and Australia (Gochfeld *et al.* 2016b). Occasional transatlantic vagrancy has been recorded, *e.g.* to Iceland, Azores, USA (Gochfeld *et al.* 2016b) and vagrants have also been reported for Micronesia (Hayes *et al.* 2016).

A breeding plumage adult Whiskered Tern was observed and photographed at Estancia La Graciela, Misiones dept. (26°34'24"S; 56°51'42"W) on 14 January 2016 by R.P.C., Holly Faithfull and Lloyd Stetson (Fig. 1G). The bird had the typical structure of a "marsh tern" *Chlidonias* sp. with broad-based wings that appeared shorter and more round-tipped than *Sterna* terns, and a short tail with a shallow fork. Its plumage was uniformly mid-grey across the wings, mantle, rump, and tail; whilst blackish underparts contrasting markedly with the white cheek and undertail-coverts, and with the pale underwing. The foraging action was also classic marsh tern: dipping down to the water to surface-pick.

This represents the first record of Whiskered Tern for Paraguay and for South America, and one of very few records in the Americas. Previous records in the Americas are limited to three records from Cape May, New Jersey, USA (in July 1993, August 1998 and September 2014), one record from Delaware Bay, Delaware, USA in July/August 1993 (assumed to be the same as the first Cape May bird), three records from Barbados and a single record from Great Inagua, Bahamas (Howell *et al.* 2014, New Jersey Audubon 2014).

Sterna trudeaui: The only reports of Snowy-crowned Tern in Paraguay are those of Contreras & Contreras (1992), who recorded one at Itá Enramada (25°37'S; 57°30'W), Central dept., on 7 May 1989; one at Puerto Nuevo de Pilar (26°52'S; 58°23'W), Ñeembucú dept. on 10 January 1992; and at least 10 (1 in the morning, 10 in the afternoon) between Puerto Naranjito and Pilar (26°56'S; 58°27'W), Ñeembucú dept. on 17 September 1992. Hayes (1995) treated these records as hypothetical/possible because of the lack of description provided, and del Castillo & Clay (2004) listed the species as requiring documentation.

Both Large-billed Tern and Yellow-billed Tern can show plumages superficially similar to that of Snowy-crowned, and a recent record of the very similar Forster's Tern *Sterna forsteri* in Mar Chiquita Lagoon, Argentina (<http://ebird.org/ebird/argentina/view/checklist/S15984614>) underlines the need for caution in evaluating undocumented extralimital records of this species. Nonetheless, the species is of probable occurrence as a vagrant in Paraguay, and has been recorded at several Argentinian localities close to the Paraguayan border. These include (in addition to those listed by Contreras & Contreras 1992) a record 109 km from the Paraguayan border at Laguna Iberá, Corrientes province (10 May 2009; F. Schmitt & R. Barros McIntosh, eBird); 63 km away at Laguna de Gramado, Misiones province; 77 km away at La Escondida, Chaco province (A. Bodrati, pers. comm.); and 77 km away at Reserva El Bagual, Formosa province (Di Giacomo 2005). The latter locality is just 99 km from Pilar, one of the localities reported by Contreras & Contreras (1992).

Thalasseus maximus: The only report of Royal Tern in Paraguay is that of Contreras (1992), who observed one individual at Pilar, Ñeembucú dept. on 10 September 1992. Unfortunately, Contreras (1992) provides only a brief description of the bird, stating that it was in non-breeding plumage with the crown greyish-white. Hayes (1995) treated the occurrence of the species in Paraguay as hypothetical/possible, while del Castillo & Clay (2004) considered it as requiring documentation.

Esteban (1953) reports a previous specimen record of a female (6662) in the Miguel Lillo Collection, Tucumán from Isla Apipé Grande, Corrientes, Argentina, taken on 24 October 1950 which is geographically close to the Contreras (1992) record and immediately adjacent to the Paraguayan border. However, given the propensity for the extralimital occurrence of terns and the fact that there are potential confusion species which are not excluded by the description provided, it seems best to maintain the Contreras (1992) record as pending documentation.

Larus dominicanus: A specimen (RMNH. AVES.46019) of the Kelp Gull with locality "Paraguay" in the Naturalis Biodiversity Center (Leiden, Holland)

lacks any collection data. Schlegel (1863) states that the specimen was "acquired from Mr Pardzudacky in 1862". De Azara's (1805) "la mayor" was attributed to this species by Hartlaub (1847), but de Azara specifically stated that the species does not occur in Paraguay. The Kelp Gull is widely distributed in the southern hemisphere breeding in South America (Burger & Gochfeld 1996) and although nowadays expanding into continental ecosystems (including freshwater lagoons) in northern Patagonia (Frixione *et al.* 2012) we treat this historical record as hypothetical in Paraguay and consider the provenance of the specimen to be likely an error.

DISCUSSION

Though it is a landlocked country, several mayor rivers that bisect Paraguay connect it to important South American wetlands and ultimately to the Atlantic Ocean coast. Large river systems like the Paraguay, Paraná and Pilcomayo Rivers are likely the main source of the wandering species of the suborder Lari recorded in Paraguay to date.

Of the 10 species documented to date, five species are terns, four are gulls and the other is the Black Skimmer. Of the species considered pending documentation, the Snowy-crowned Tern would seem the most likely to be subsequently documented in Paraguay given the proximity of recent records in northern Argentina.

The increased number of reports of gulls and terns in Paraguay is likely a result of an increasing interest in waterbirds and birding in general in Paraguay. Since 2001 the Neotropical Waterbird Census, a waterbird monitoring program implemented by a network of volunteers twice a year, has attracted an increasing number of participants. Furthermore, more local people are becoming involved in birding at a time when ecotourism is beginning to attract considerable national and international attention. It would seem that additional records of interest may be expected in the near future, perhaps even including new records of the long absent Brown-hooded Gull.

ACKNOWLEDGEMENTS

Fieldwork at Laguna Sanidad was part of projects undertaken by the *Asociación Guyra Paraguaya* and supported by USFWS-NMBCA. P.S. records were obtained during FAUNA Paraguay birding tours, and all participants in them are thanked for their support. Brad Andres, Daniel Blanco, German Pugnali and Martin Reid all helped confirm the identity of the Franklin's Gull. Mark Pearmann provided information on records in Argentina. Steven van der Mije of the Naturalis Biodiversity Center

for providing details of specimens in their collection. The authors also want to thank J. Escobar, C. Morales, S. Centrón, H. Cabral Beconi and R. Zarza for sharing their observations of the Grey-headed Gull. Roberto Derna kindly provided his photograph of Grey-headed Gull, M. Coath for providing the photograph of the Laughing Gull, Floyd Hayes for the permission to use the Arctic Tern photograph and H. Faithfull for providing the photograph of the Whiskered Tern. P.S. is grateful for the support received from the PRONII program of CONACYT Paraguay.

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Associate Editor: Luis F. Silveira.