



Field identification of Least and Yellow-billed Terns: experience from French Guiana

Alexandre Renaudier[†] and Olivier Claessens

Two small terns are found along the coast of the Guiana Shield and sometimes in the interior: Yellow-billed *Sternula superciliaris* and Least Tern *S. antillarum*. For the unfamiliar observer, their identification is often problematic. Numerous identification errors were found in the former data base of the *Groupe d'Étude et de Protection des Oiseaux en Guyane (GEPOG)*, and validators of the participatory database *Faune-Guyane* (www.faune-guyane.fr) are regularly confronted with dubious data, reflecting the difficulties encountered by occasional or visiting observers. While both *Sternula* terns are generally easy to distinguish from other terns by their size

and manner of flight, identification to species requires attention to certain physical and colour details which are not always clearly mentioned in field guides, e.g. Harrison (1983). Thus *Birds of Venezuela* (Hilty 2003) does not show the non-breeding plumage of the Least Tern, even though it is essentially in this plumage that it appears in South America. The author stresses the (supposed) rarity of this tern in Venezuela, its similarity to (and potential confusion with) Yellow-billed Tern, and the need for voucher photographs; yet the *Sternula* terns are not difficult to separate in the field. We propose here a synthesis of distinctive criteria that permit the confident identification to species of *Sternula* terns. Although initially intended for birdwatchers in French Guiana, and therefore focusing on the local situation of these

[†] Deceased



species, this paper should also be of interest for ornithologists in neighbouring countries.

The characteristics of *Sternula* terns

Within the family of Laridae, terns (sub-family Sterninae) are distinctive in having a pointed bill, short legs, a tail almost always notched or forked, and a black cap when in breeding plumage. However they share with other Laridae a generally white plumage, with a more or less dark grey mantle, which is even black in the Sooty Tern *Onychoprion fuscatus*. There are a few exceptions, such as the noddies *Anous* spp., the Inca Tern *Larosterna inca* with its entirely dark plumage, and the White Tern *Gygis alba* with its immaculate white plumage.

As their name suggests, the *Sternula* species are the smallest of the family. Their size and nervous flight with rapid wing flapping are sufficient to readily separate them from all other terns. Superficially similar, but much larger species occurring in the area are 'Cayenne' (Sandwich) Tern *Thalasseus sandvicensis eurygnathus* in all plumages, and Common Tern *Sterna hirundo* and Black Tern *Chlidonias niger* in non-breeding plumage. Despite its similarly coloured bill, 'Cayenne' Tern is readily distinguished from

Yellow-billed Tern by its larger size, ruffled rear-crown feathers and direct, powerful flight. Like the Least Tern, the medium-sized Common and Black Terns both have a dark bill outside the breeding season, when they appear along the coast of the Guiana Shield. The Common Tern however has a much longer, deeply forked tail which gives it a well proportioned and elegant silhouette. The Black Tern has darker grey upperparts, including the tail, a white nuchal collar, a black cap extending down the eyes and a dark spot on the sides of the neck, just before the wings. It also has broader wings and a calmer flight than the Least Tern.

Distribution and timing of occurrence

Both *Sternula* species are migrants in French Guiana. As a result of many historical misidentifications, any analysis of the migration phenology of these two terns should be treated with caution. However, recent data are reliable enough to allow us to outline a timetable for their presence, which is largely explained by their breeding distribution.

The **Least Tern** breeds along the coasts and the large rivers of North and Middle America and the West Indies, on Aruba and Curaçao, and locally on offshore islands of Venezuela (Raffaele *et al.*

>> IDENTIFICATION WORKSHOP LEAST AND YELLOW-BILLED TERNS



1

Figure 1: Least Tern *Sterna antillarum* in breeding plumage. Note the black bill tip and sharply defined, trapezoidal white frontal spot. Kourou, French Guiana, 12 March 2009 (M. Dechelle).



2

Figure 2: Least Terns *Sterna antillarum* (first and third from left) and Yellow-billed Terns *Sterna superciliaris*, side by side. Kourou, French Guiana, September 2003 (A. Vinot).



3



4

Figure 3: Yellow-billed Tern *Sterna superciliaris* in non-breeding plumage. Note diffuse grey spot at tip of bill and at nostrils, and length of legs. Kourou, French Guiana, 1 June 2007 (M. Giraud-Audine).

Figure 4: Yellow-billed Terns *Sterna superciliaris* in non-breeding plumage. Note bill length, shape and colouration. Kourou, French Guiana, October 2009 (H. Michel / www.oiseaux.net).



Figure 5: Least Tern *Sternula antillarum* in non-breeding plumage. Note entirely black bill, short and sharp with angled lower mandible; and short legs. Cayenne, French Guiana, 27 March 2014 (J. Amirat).

Figure 6: Least Tern *Sternula antillarum* in breeding plumage. Black tip of bill may be reduced or absent. Only two outermost primaries are black. Arizona, USA, May 2007 (A. Colon / www.oiseaux.net).

Figure 7: Least Tern *Sternula antillarum* in non-breeding plumage. Note black, angular and very pointed bill, and colour of legs. Martinique, Lesser Antilles, 16 September 2006 (V. Lemoine / www.oiseaux.net).

Figure 8: Yellow-billed Tern *Sternula superciliaris* in post-breeding (pre-basic) moult. Bill and legs already show non-breeding colouration. Yiyi marshes, Sinnamary, French Guiana, 12 July 2012 (A. Baglan).

Figure 9: Yellow-billed Tern *Sternula superciliaris* in post-breeding (pre-basic) moult. Three outer primaries (fourth is missing) form a broad black band. Note also length, shape and colour of the bill. Black crown begins to fade. Awala-Yalimapo, French Guiana, 9 May 2014 (F. Royer).

1998, Hayes 2001, Hilty 2003, de Boer *et al.* 2012, Gochfeld *et al.* 2013). A single breeding colony has been known since 2008 on the northern coast of Brazil, on Curupu Island, in the state of Maranhão (Rodrigues *et al.* 2010), but other breeding localities are supposed to exist along the northern Brazilian coast (Carlos & Fedrizzi 2013). The Least Tern is at least partially migratory and it winters on the coasts of northern South America, but the extent of movement and winter distribution of the different populations remain unclear, especially for Caribbean populations (Raffaele *et al.* 1998, Gochfeld *et al.* 2013). Most records in Trinidad are between August and October (Kenefick *et al.* 2011). In French Guiana, the first migrants are observed in June, and the last passage birds are seen in April, so that the species can be observed almost year round. The largest numbers are observed from the end of August until the end of October. As in Suriname (Ottema *et al.* 2009), it is virtually absent or at least very rare in the middle of the boreal winter, from at least November to the middle of January (Collectif 2014a). This may indicate that most French Guiana records refer to passage birds in transit to main winter quarters which lie further South. However, this suggested scheme remains to be confirmed by a larger data set. Large numbers of wintering individuals have been counted on the coast of the state of Ceará in northern Brazil, which, together with the state of Maranhão, may represent the most important stop-over or wintering area for the species (Carlos & Fedrizzi 2013). Reliable, quantified data from other countries of northern South America, which would help us understand the phenology of migration, are still lacking.

The **Yellow-billed Tern** breeds exclusively in South America, throughout most of the continent. It nests near lowland freshwater, preferring sandbars and the shores of lakes and major rivers in the interior of the continent. It is a widespread resident in Venezuela (Hilty 2003). Outside the breeding season, it spreads onto the northern and eastern coast of South America (Gochfeld & Burger 1996). It is a common non-breeding visitor to western Trinidad (Kenefick *et al.* 2011), but is unknown in the more northerly West Indies (Raffaele *et al.* 1998). According to Haverschmidt and Mees (1994), it should nest in Suriname, but this is not confirmed by Ottema *et al.* (2009). It has not yet been found breeding in French Guiana, although this would be possible in the dry season (i.e. from August to November); however, it is observed year-round in French Guiana, with an increase in observations in March–April and from the end of August till the beginning of

October, corresponding to the presumed passage of migrating individuals (Collectif 2014b). Coastal migrations on a continental scale are not known (Gochfeld & Burger 1996).

Habitat

On its wintering grounds and on passage, **Least Tern** is a strictly coastal bird. While it is abundant along the coast, it usually does not venture over land outside the breeding season, even not a few hundred metres from the beach. In French Guiana, all observations of putative Least Terns away from the sea coast have proven to refer to Yellow-billed Terns. There is no persuasive contradictory record. Thus habitat seems a valuable identification feature in continental South America. A note of caution though: on 20 September 1998 F. Hayes (*in litt.* 2014) observed a Least Tern more than 1 km from the coast in the Caroni ricefields of Trinidad. Although we believe that the island situation of Trinidad may explain this unusual observation, it indicates that in exceptional circumstances Least Terns may wander a short distance inland in South America also.

On the contrary, **Yellow-billed Tern** outside the breeding season can be observed both at sea and in estuaries as well as in marshes and on brackish or fresh coastal waters (Haverschmidt 1972, and pers. obs.). In French Guiana as in Suriname (Haverschmidt 1972), it is common at sea along the coast, where it joins other terns to fish or rest on mudflats, and it also regularly fishes on estuaries, brackish lagoons, and freshwater ponds and lakes. In contrast to its breeding distribution in Venezuela, in French Guiana Yellow-billed Terns only occasionally venture along rivers far into the interior, with one individual even seen flying on 24 November 2007 over the Pic du Petit Croissant (03°31'N, 52°19'W), an inselberg more than 100 km from the coast (Claessens & de Pracontal 2008).

Plumages and moult

Both *Sternula* species exhibit a *complex alternate* moult strategy, with three successive plumages during the first cycle (Howell 2010). As a northern migrant, **Least Tern** has a typical boreal moult calendar, simple and predictable: adult birds are in breeding (alternate) plumage between February/March and May/June and in non-breeding (basic) plumage for the remainder of the year. The breeding plumage is acquired for a very short period, and disappears as soon as reproduction is completed. In June, the first Least Terns arriving as migrants on the coast of the Guianas already

sport their non-breeding plumage. In spring, they undergo a pre-breeding (pre-alternate) moult on their wintering grounds before they return, so that they arrive on their breeding grounds in breeding plumage (Carlos & Fedrizzi 2013). An individual was photographed in French Guiana in full breeding plumage on 12 March 2009 (Fig. 1). In a group of Least Terns photographed in French Guiana in late March 2013, all adults were in breeding plumage. However young birds retain immature plumage throughout their first winter until the following summer (Sibley 2000).

Moult calendar is less clearly defined in the **Yellow-billed Tern**. According to Haverschmidt (1972), birds observed in Suriname are supposed to breed in November–February, although he also reports birds breeding in Paraguay, Uruguay and Peru in July–September, and also in December–March in Uruguay. Breeding and non-breeding plumaged individuals can probably be found on our shores at any time of the year. However, this assertion deserves to be confirmed by careful observations and to be checked according to the reproduction periods in various parts of the species' range.

The breeding plumage of *Sternula* terns is characterized by a white mark on the forehead, separating the black lores from the cap and ending in a point above the eye. Bill and legs are bright yellow, while the mantle is silver grey. In non-breeding plumage, bill and legs become dull and darken at the end of the reproduction period, the black cap fades to leave only a broad diffuse band behind the eye, while a dark area appears on the lesser wing coverts, reminiscent of the dark carpal band of immatures (Hilty 2003). The immature plumage is similar to the adult non-breeding plumage, with more pronounced dark marking on the upperwing and scapulars.

Identification of resting birds

For both *Sternula* terns, 'jizz' is an important identification character. Jizz is a set of characters that are often difficult to define, but which together help to identify the bird at first sight, regardless of the plumage pattern (Coward 1922, McDonald 1996). It therefore includes both the morphology and the behaviour of the bird. For perched terns, the morphological structure of the bird is a useful pointer. However, the appreciation of differences requires a certain experience with the species concerned.

The *Sternula* terns are very small. Their tiny size makes them conspicuous amongst the larger terns which they often join on resting places. The

size difference between the two species is minimal, yet perceptible when seen side-by-side. Although they are the same linear size (c.23 cm (Gochfeld & Burger 1996, Gochfeld *et al.* 2013), Yellow-billed Tern is significantly stouter than Least Tern, whose body looks appreciably smaller and slighter (Fig. 2). The latter is indeed the smallest tern in the world in terms of bulk.

Further details complement and accentuate this structural difference between both terns. Yellow-billed Tern is longer legged, and it especially has a stronger and longer bill with a dagger-like shape (Figs. 3, 4). Least Tern has a proportionally large head, which contrasts with its diminutive, slender body; its bill is shorter, with a marked gonydeal angle to the lower mandible and a very sharp tip (Figs. 5, 6). These structural features are subtle, but once learned prove to be quite reliable and allow rapid and confident identification from a distance.

With regard to bare part colouration, again the bill is diagnostic. During reproduction, the bill of **Least Tern** is bright yellow with a clearly defined black tip only. This black tip may be reduced or absent, especially in Caribbean populations (Fig. 6). However, this tern appears on the coast of the Guianas mostly outside the breeding season and it then has an all black bill. In this period, the legs also lose their bright colour and become dull and dark horn-coloured, ochre, or brownish. Although still lighter coloured than the bill, the legs may appear black from a distance (Figs. 5, 7). In contrast, the bill of **Yellow-billed Tern** is yellow during the breeding season, subtly lighter than that of Least Tern, and pale yellow mixed with black in the non-breeding season, giving it a dirty appearance (Figs. 3, 8). Unlike the Least Tern, dark areas are grey rather than black and are not sharply delimited. The dark tip may extend over a third of the total length of the bill. Besides the tip, a grey mark is also observed at the base of the culmen (upper mandible) between forehead and nostrils. The bill is never completely black, whatever the age or time of year. Its legs are bright yellow in the breeding season, and they become pale yellow to greenish—but never blackish—in non-breeding plumage.

In breeding plumage, note that the white forehead of the **Least Tern** forms a large triangle or trapezoid. In Yellow-billed Tern the white forehead is narrower and tapers back to extend over the eyes, giving rise to its specific name *superciliaris*. This subtle criterion is of limited use in French Guiana where Least Terns in breeding plumage are rare.



10



11



12



13



14



15



16



17

Facing page

Figure 10: Yellow-billed Tern *Sternula superciliaris* in non-breeding plumage. Outer flight feathers form a large black triangle. Note also long, thick bill with grey tip and diffuse dark spot near nostrils. Yiyi marshes, Sinnamary, French Guiana, 25 August 2011 (A. Baglan).

Figure 11: Yellow-billed Tern *Sternula superciliaris* in breeding plumage. Kourou, French Guiana, 20 July 2008 (P. Ingremeau).

Figure 12: Yellow-billed Tern *Sternula superciliaris* in flight (same individual as Fig. 9). Contrast of outer primaries varies with angle of sunlight. Awala-Yalimapo, French Guiana, June 2008 (M. Chrétien).

Figure 13: Least Tern *Sternula antillarum* in breeding plumage. Only two dark primaries draw a well contrasted black line on the forewing; note also reduced black tip of bill. East Beach, Galveston, Texas, USA, 3 May 2008 (Greg Lavaty/www.birdweb.org).

Figure 14: Least Tern *Sternula antillarum* in non-breeding plumage (same individual as Figure 6). Martinique, Lesser Antilles, 16 September 2006 (V. Lemoine/www.oiseaux.net).

This page

Figure 15: Least *Sternula antillarum* (in breeding plumage) and Yellow-billed Terns *Sternula superciliaris* (in non-breeding plumage) in flight. Compare upwearing patterns. Mana, French Guiana, 30 March 2013 (K. Pineau).

Figure 16: Yellow-billed Tern *Sternula superciliaris* in non-breeding plumage. Bill colouration is characteristic, despite confusing upwearing pattern due to the angle of view. Kourou, French Guiana, 20 July 2008 (P. Ingremeau).

Figure 17: How many species of terns do you see in this picture?

Answer = four: Least Terns *Sternula antillarum*, all adults are in breeding plumage, five immatures (left) are recognised by their black bill; Yellow-billed Terns *Sternula superciliaris*, all in non-breeding plumage; there are also four Black Terns *Chlidonias niger* (centre and right) in various stages of the pre-breeding (pre-alternate) moult; and one White-winged Tern *Chlidonias leucopterus*, an adult in breeding plumage (centre), an individual which was one of a group of three, the first ever observed in French Guiana. Mana, French Guiana, 30 March 2013 (K. Pineau).

Identification of flying birds

Here again jizz is a helpful tool. Both species have a stocky and poorly-proportioned silhouette in flight, with long, narrow wings and a very short and slightly forked tail, and do not show the elegance and the flowing flight of the ‘typical terns’ (*Sterna* species).

In **Yellow-billed Tern**, when the bird is fishing the length of the bill pointing downward is striking and reinforces the disproportionate and angular appearance of the head (Figs. 9, 10). **Least Tern**, with its shorter bill, has a more harmonious silhouette, although this subjective and anthropomorphic assessment is somewhat weakened by its more nervous flight.

A behavioural criterion is a key addition to morphological criteria, since flying behaviour differs significantly between the species. **Least Tern** has a nervous and very active flight, it often hovers and performs dizzying dives into the water; it is sometimes aggressive towards congeners. **Yellow-billed Tern** has a quieter, smoother flight and rarely dives, picking its food from the water surface. In that way, it behaves more like the Gull-billed Tern *Gelochelidon nilotica* or *Chlidonias* ‘black’ terns.

As for the plumage, the observer must focus on the upperwing pattern. Most field guides are correct on this point, but they do not draw enough attention to the discriminating detail. Both *Sternula* terns have dark outer primaries that contrast with the rest of the light grey wing, resulting in a band or dark triangle at the leading edge of the wing. However, the extent of this pattern is radically different between both species. According to Hayes (2001), **Yellow-billed Tern** has only three (rarely two or four) dark primaries, four being rare in the specimens he examined. From our experience, however, it has at least three—and more often four or five—dark outer primaries, which produce a large dark triangle at the leading edge of the wing (Figs. 9, 10, 11, 12). This difference may be caused by the specimens Hayes examined being (presumably) mostly in breeding plumage, while the birds we watched and the photographs we examined were mostly of non-breeding plumaged or immature birds. Geographical variation should not be excluded, but has not been checked. Another possible explanation lies in the appreciation of where the “dark” primaries end, since this pattern fades and merges gradually into the light grey inner part of the wing, so that the tonal contrast between the two areas is sometimes weak. Note that this pattern may appear darker or lighter and more

or less contrasting according to the incidence of light (Fig. 12). It has been stated that Yellow-billed Tern has darker grey upperparts than Least Tern (Harrison 1983). However this is questioned by Hayes (2001) who examined museum skins and in any case it is an unreliable criterion in the field because of much greater variations in the appearance of grey tones in different light conditions.

In adult **Least Tern**, typically only the two outermost primaries are black. They form a thin black, well contrasting line, almost of equal width throughout the length of the feathers in breeding plumage (Figs. 13, 14, 15). Birds with three black primaries are exceptions (one noteworthy example from Orlando, Florida, on www.flickr.com/photos/nebirdsplus/6028978132) or maybe related to age, since juveniles possess up to six dark primaries, progressively fading into the wing. In immature or non-breeding plumage, worn primaries sometimes create an extensive dark area which may recall the wing pattern of Yellow-billed Tern (Anonymous 2009). However the extend of the dark area is still reduced compared to the latter species, with the outermost two primaries much darker than the next ones (Fig. 14). Moreover, the carpal bar of immature Least Terns is much darker and more prominent than in immature Yellow-billed Terns (Haverschmidt 1972, Hayes 2001).

The characteristic colour of the bill—completely black in most **Least Tern** at these latitudes, and straw yellow, more or less mixed with grey (in non-breeding plumage) or entirely bright yellow right to the tip (in breeding plumage) in **Yellow-billed Tern** (Figs. 11, 16)—helps clinch identification of individuals with atypical wing patterns.

Conclusions

The distinction in the field of the two *Sternula* terns is not impossible, nor as difficult as is generally supposed. We hope that this article will help observers to identify with greater certainty these two species in order to better understand their distribution and phenology of migration.

ACKNOWLEDGEMENTS

This paper has been developed thanks to the bird photographers whose high quality pictures were used to verify and illustrate some of the criteria described here. We express our gratitude to all who submitted images: Jonathan Amirat, A. Baglan, Marc Chrétien, Alfredo Colon (<http://alfredo.colon.oiseaux.net>), Maxime Dechelle (www.oiseaux.net/photos/maxime.dechelle), Alex Feldstein (www.alexfeldsteinphotography.com), Reinhard Geisler, Michel Giraud-Audine, Patrick

Ingremeau (www.pbase.com/tamandua), Greg Lavaty (<http://www.texastargetbirds.com>), Alexander Lees, Vincent Lemoine (<http://vincent.lemoine.oiseaux.net>), Hervé Michel (www.oiseaux-nature.com), “nebirdsplus” (www.flickr.com/photos/nebirdsplus), Kevin Pineau, Frédéric Royer, David Speiser, Sylvain Uriot and Alexandre Vinot. Alexander Lees kindly made his photos of *Sternula antillarum* in the hand available to us. The online library of the GEPOG (www.gepog.org) and the websites [oiseaux.net](http://www.oiseaux.net) (www.oiseaux.net), WikiAves (www.wikiaves.org.br) and Flickr (www.flickr.com) were also consulted. Floyd Hayes, Alexander Lees, Chris Sharpe, Sylvain Uriot and Alexandre Vinot commented on earlier versions of this paper. John Bates, Frederik Brammer, Manuel Marin, Chris Sharpe and Olivier Tostain helped with important references. Johan Ingels helped us to translate the original French manuscript.

REFERENCES

- Anonymous (2009) *Identification essay. Least Tern (Sternula antillarum) and Yellow-billed Tern (S. supercilialis)*. Southeastern Caribbean Birds photo gallery. <http://secrb.trinidadbirding.com/ideastyellow-billedtern.html>. Accessed on 19 June 2014.
- de Boer, B., Newton, E & Restall, R (2012) *Birds of Aruba, Curaçao and Bonaire*. London: Christopher Helm.
- Carlos, C. J. & Fedrizzi, C. E. (2013) History, distribution, and seasonal abundance of the Least Tern *Sternula antillarum* (Aves: Charadriiformes: Sternidae) in Brazil. *Zoologia* 30: 135–142.
- Claessens, O. & de Pracontal, N. (2008) *Inventaire ornithologique du Pic du Petit Croissant, du 20/11 au 29/11/2007*. Cayenne: Office National des Forêts. Unpublished report.
- Collectif (2014a) Infos par espèce, *Sternula antillarum*. GEPOG / www.faune-guyane.fr. Accessed on 4 May 2014.
- Collectif (2014b) Infos par espèce, *Sternula supercilialis*. GEPOG / www.faune-guyane.fr. Accessed on 4 May 2014.
- Comité d'Homologation de Guyane (2014) *Liste des oiseaux de Guyane, version janvier 2014*. Accessed from www.gepog.org.
- Coward, T. A. (1922) *Birds haunts and nature memories*. London: Frederick Warne.
- Gochfeld, M. & Burger, J. (1996) Yellow-billed Tern (*Sterna supercilialis*). In: del Hoyo, J., Elliott, A., Sargatal, J., Christie, D.A. & de Juana, E. (eds.) (2013) *Handbook of the birds of the world alive*. Barcelona: Lynx Edicions. Retrieved from <http://www.hbw.com/node/54034> on 4 May 2014.
- Gochfeld, M., Burger, J. & Bonan, A. (2013) Least Tern (*Sterna antillarum*). In: del Hoyo, J., Elliott, A., Sargatal, J., Christie, D.A. & de Juana, E. (eds.) (2013) *Handbook of the birds of the world alive*. Barcelona: Lynx Edicions. Retrieved from <http://www.hbw.com/node/54033>.
- Harrison, P. (1983) *Seabirds: an identification guide*. Boston: Houghton Mifflin.
- Haverschmidt, F. (1972) Notes on the Yellow-billed Tern *Sterna supercilialis*. *Bull. Brit. Orn. Club* 92: 93–95.
- Haverschmidt, F. & Mees, G. F. (1994) *Birds of Suriname*. Paramaribo: Uitgeversmaatschappij VACO n.v..
- Hayes, F. E. (2001) Identification of Least Tern *Sterna antillarum* and Yellow-billed Tern *S. supercilialis*, with a sight record of Yellow-billed Tern from Tobago, West Indies. *Cotinga* 15: 10–13.
- Hilty, S. L. (2003) *Birds of Venezuela*. London: Christopher Helm.
- Howell, S. N. G. (2010) *Molt in North American birds*. Peterson Reference Guides. New York: Houghton Mifflin Harcourt.
- Kenefick, M, Restall, R. & Hayes, F. (2011) *Birds of Trinidad & Tobago*. Second edition. London: Christopher Helm.
- McDonald, D. (1996) The etymology of jizz. *Canberra Bird Notes* 21: 2–11.
- Raffaele, H., Wiley, J., Garrido, O., Keith, A. & Raffaele, J. (1998) *A guide to the birds of the West Indies*. Princeton, New Jersey: Princeton University Press.
- Remsen, J. V. Jr., Cadena, C. D., Jamarillo, A., Nores, M., Pacheco, J.F., Robbins, M. B., Schulenberg, T. S., Stiles, F. G., Stotz, D. F. & Zimmer, K. J. (2014) *A classification of the bird species of South America*. American Ornithologists' Union, <http://www.museum.lsu.edu/~Remsen/SACCBaseline02.htm>. Accessed on 4 May 2014.
- Sibley, D. A. (2000) *The Sibley guide to birds*. New York: A. A. Knopf.

ALEXANDRE RENAUDIER† & OLIVIER CLAESSENS

GEPOG, 15 avenue Pasteur, F-97300 Cayenne, France.
E-mail: olivier.claessens@gepog.org