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What is the breeding range and breeding season of Pearly-breasted Cuckoo *Coccyzus euleri*? New records and breeding in French Guiana

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SUMMARY.—Pearly-breasted Cuckoo *Coccyzus euleri* is a rare South American forest cuckoo and almost nothing is known concerning its breeding biology. It is considered to be a rare austral migrant in northern South America. In French Guiana, it was first documented in 2009 in Nouragues Nature Reserve. We detail seven new records in northern French Guiana in 2010–15, including a pair breeding. We provide information on the nest, nest site and behaviour. The breeding attempt failed during incubation, presumably due to predation. The new records were obtained in primary or old secondary forests contiguous to the primary forest block, between 9 August and 17 September. Most birds were spontaneously vocalising and strongly reacted to playback. These observations, and other known breeding records, raise questions as to the species' status in northern South America.

Pearly-breasted Cuckoo *Coccyzus euleri* is a poorly known and apparently rare South American cuckoo. Due to possible confusion with the commoner boreal migrant Yellow-billed Cuckoo *C. americanus*, the paucity of reliable records north of the Amazon and the secretive behaviour of this forest cuckoo, its breeding range and status in northern South America are unclear. It is perhaps best considered an austral migrant, which breeds mainly in southern and eastern Brazil, northern Argentina and Paraguay, but migrates to northern South America (Payne 2005, Claessens *et al.* 2011, Erritzøe *et al.* 2012, Payne *et al.* 2013). The species is uncommon and irregular in Venezuela, where its status is unclear (Hilty 2003, Payne 2005). It is scarce in Guyana (Braun *et al.* 2007), while in Surinam the species is known only from three historical specimens (Ottema *et al.* 2009). There are two records in North America: a vagrant collected on Sombrero Island (Anguilla), the northernmost of the Lesser Antilles (Banks 1988, AOU 1998), and a breeding pair at Lago Bayano, Panama, in 2014 (Campos Cedeño & Vallely 2015).

The breeding biology of Pearly-breasted Cuckoo is poorly known (Payne *et al.* 2013). Few nests have been found (see below) and most breeding reports were inferred from the body condition of specimens. Here we describe another breeding event, in French Guiana, and provide new data on the species' nest, nest site and nesting behaviour. We also discuss the nesting range of this cuckoo, via a review of all known breeding records.

Records in French Guiana (2009–15)

Up to 2015, eight records of Pearly-breasted Cuckoo, involving a total of 13 individuals, have been validated by the French Guiana Rarities Committee (Fig. 1). Pearly-breasted Cuckoo was recorded for the first time in French Guiana on 9 August 2009, when T. Deville photographed one in the forest canopy at Saut Pararé, Nouragues Nature Reserve, Régina

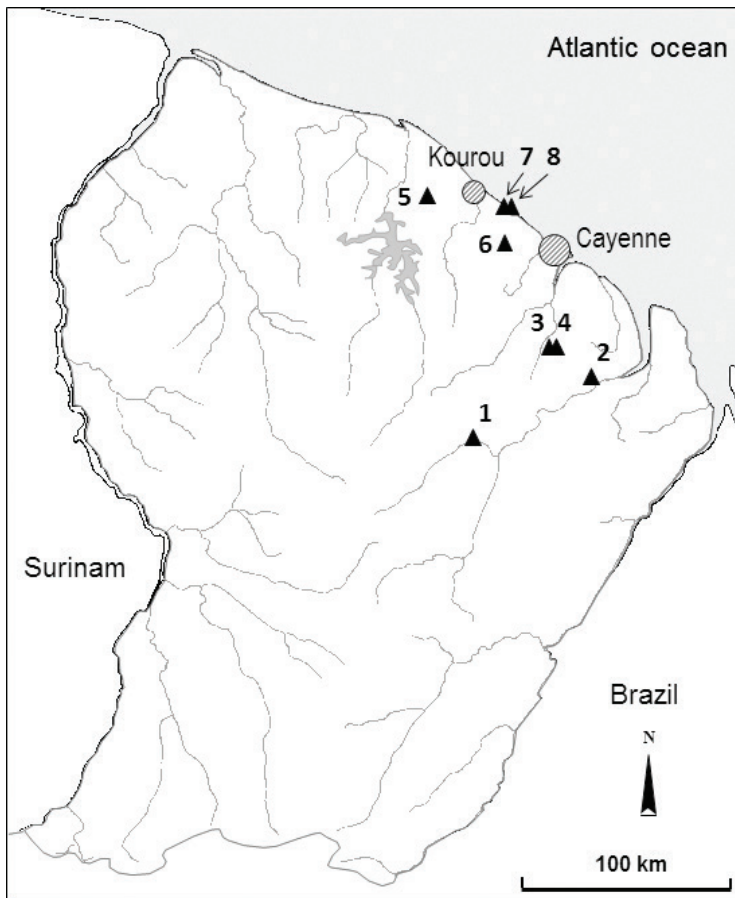


Figure 1. Records of Pearly-breasted Cuckoo *Coccyzus euleri* in French Guiana. 1. Saut Pararé, Nouragues Nature Reserve, Régina. 2. Montagnes Tortue, Régina. 3. Montagne Maripa, Roura. 4. Tibourou forest, Roura. 5. Creek Eau Claire, Kourou. 6. Creek Gilette, Quesnel (Risquetout), Macouria. 7–8. Road D13 to 'Guatemala', Macouria.

(04°02'N, 52°41'W) (Claessens *et al.* 2011). Undocumented records mentioned by Tostain *et al.* (1992) are now considered dubious (Comité d'Homologation de Guyane unpubl.).

In 2010, A. Renaudier observed at least seven individuals on 15–17 September at Montagnes Tortue, Régina (04°18'N, 52°13'W), on the track to Montagne Maripa, Roura (04°27'N, 52°21'W) and in Tibourou forest, Roura (04°27'N, 52°20'W), including at least five individuals within a few hundred metres at the last locality (Claessens *et al.* 2011, Claessens & Comité d'Homologation de Guyane 2015). Except one bird, all were spontaneously vocalising (giving the rattle call, or singing) in the canopy, and all responded to playback by answering, and some of them by flying overhead. The song was similar to a recording from Brazil (C. Albano, www.xeno-canto.org: XC6036). When seen, they appeared noticeably smaller and more slender than Dark-billed Cuckoo *C. melacoryphus* with which the observer was familiar, with a long tail and no rufous in the primaries. Sound-recordings made during the observations are archived at xeno-canto.org (XC72105–109).

In 2011, A. Renaudier observed an individual along the track to Eau Claire creek, Kourou (c.05°09'N, 52°54'W) on 31 August (Claessens *et al.* 2014). The bird was following a canopy flock including Purple-breasted Cotinga *Cotinga cotinga*, Pompadour Cotinga *Xipholena punicea*, Guianan Gnatcatcher *Polioptila guianensis* and Blue-backed Tanager *Cyanicterus cyanicterus*, among other species. It responded to playback of the species' song using the rattle call.

There were no records of *C. euleri* in 2012; however, A. Renaudier was by then no longer in French Guiana. On 10 and 16 August 2013, an adult was photographed (Fig. 2) and sound recorded by OC, FR & G. Jacotot, near Gillette creek, at Quesnel (Risquetout forest), Macouria (04°56'N, 52°32'W). The bird first sang spontaneously and subsequently emitted rattle calls, as if disturbed by the observers. Following playback, it perched overhead. On 16 August, it responded to playback with rattle calls but did not sing. On 14 August 2013, a few days after the first observation in Risquetout, a pair was found by MGA, FR & LS on road D13 to 'Guatemala', Macouria, 10 km south-west of Kourou (05°05'N, 52°33'W). The pair was followed in a breeding attempt (see below) until 1 September, when they disappeared and the nest was abandoned. On 28 August 2013, a few minutes after the presence of the pair near their nest was confirmed, a third individual was photographed by MGA, some 650 m away on the same road (05°05'N, 52°32'W). Details of the white undertail markings confirmed that it was a different individual. There were no records in 2014–15 despite specific searches by OC.

Except the 'Guatemala' site, the localities mentioned above are all within or at the border of the primary forest block, in north-east French Guiana. Tibourou, Risquetout and Eau Claire are old, low-canopy, lowland secondary forests, contiguous with the primary forest block. Distance to the forest edge was shortest at Risquetout, only 2 km. Other sites are several dozen km from edges, discounting roads, tracks or rivers. The forest at Saut Pararé in Nouragues Nature Reserve is high-canopy (>40 m) pristine lowland forest. The nesting site near 'Guatemala' appears atypical for the species, a 300 m-wide, low-canopy (c.10 m) woodlot on a sandy bar, surrounded by coastal mangrove on one side and by swampy savannas, pastures and cultivated areas on the other. The nest was <100 m from a cleared area and <250 m from a natural edge with savanna.

Breeding event

On 14 August 2013, along road D13 to 'Guatemala', FR, LS & MGA heard the song of a Pearly-breasted Cuckoo at 07.38 h, c.100 m away. A second individual answered nearby with rattle calls. The second bird was discovered by LS, 5–6 m above ground in a tree, and was watched for c.15 minutes, during which time FR sound-recorded the vocalisations of both individuals (recording archived by the French Guiana rarities committee). At 08.20 h, the male (identified by its behaviour) perched near the female, holding either a caterpillar or small twig in its bill (Fig. 3). The female adopted a submissive posture, its body flattened and wings slightly drooped, whereupon the pair copulated. It is unclear if the male offered the item to the female or not, but it departed shortly afterwards; the female remained another 13 minutes on the same perch, before leaving at 08.33 h.

On 17 August, just one individual was heard by MGA. During the next two weeks, both individuals were regularly observed and heard by many birdwatchers. Two different vocalisations were frequently heard until incubation started. The song was a series of loud and somewhat rough, frog-like notes (e.g. A. Renaudier, XC72107), given by both sexes. A rattle call (e.g. M. Giraud-Audine, XC147847; A. Renaudier, XC72105) was interpreted as contact or aggression, rather than alarm, as it was often emitted in response to playback.

Nestbuilding was observed on 24–25 August. On 24 August, one bird (later identified as the male) was observed flying back and forth over the road, carrying items in its bill, permitting FR & LS to discover the nest in a tree by the road, c.10 m from where they had copulated ten days before. The nest was sited c.10 m above ground in a small tree, 2 m below its crown, on the distal part of a horizontal branch. As the tree was invaded by a liana, the nest was well concealed by dense foliage and tangled branches, and it was only partially visible from the road. The dense understorey with many spiny palms prevented



Figure 2. Pearly-breasted Cuckoo *Coccyzus euleri*, Risquetout forest, Macouria, French Guiana, 10 August 2013 (F. Royer)

Figure 3. Male Pearly-breasted Cuckoo *Coccyzus euleri* holding something in its bill and perching beside the female, just prior to copulation, 'Guatemala', Macouria, French Guiana, 14 August 2013 (F. Royer)

Figure 4. Male Pearly-breasted Cuckoo *Coccyzus euleri* feeding on a hairy caterpillar, 'Guatemala', Macouria, French Guiana, 1 September 2013 (M. Giraud-Audine)

closer access to the tree. Mean canopy height in the vicinity of the nest was <15 m. The cuckoo collected material in another tree partly invaded by a liana less than 20 m away, on the other side of the road. Having collected a twig, the male crossed the road, perched c.2–3 m from the nest and then proceeded by hopping from perch to perch, heavily concealed by vegetation, always following the same route through the canopy. Items were passed to the female, who remained in the nest arranging it, whereas the male departed immediately. Most material was collected in nearby trees. Twice that day, the male changed tactics and returned following a longer absence with a bill full of thin fibres, which the female placed at the base of the nest. Once a dead leaf was brought. During our observations, nest construction was exclusively performed by the female, who received material from the male's bill. Nine visits by the male were observed that day between 07.40 h and 08.50 h. On 25 August between 07.30 h and 12.00 h, the male visited the nest five times with material collected in a tree on the other side of the road. Material was passed to the female in the nest, who arranged it without changing position. Nest materials that day were identified as pieces of a dead liana, 'grass-like' filaments (perhaps bark strips), moss and a dead leaf.

As the nest was left unattended for long periods on 25 August, we believe that eggs had not yet been laid. On 28 August and the next days, however, the female was obviously incubating. Thus, egg laying occurred between 26 and 28 August. On 28 August, between 09.45 h and 10.45 h, the female left the nest for just ten minutes and returned inconspicuously; she was still present in the evening. On many occasions on 28 August and 1 September, we noticed the strange position of the incubating female, as judged from our

TABLE 1

Breeding records of Pearly-breasted Cuckoo *Coccyzus eulieri*. Localities are listed from north to south. Where not given in the original publication, coordinates are from Paynter (1982, 1995) or Paynter & Traylor (1991). COP: Colección Ornitológica Phelps, Caracas; FMNH: Field Museum of Natural History, Chicago; MZUSP: Museum of Zoology, University of São Paulo; WA = wikiaves.com.br.

No.	Country	Locality	Latitude	Longitude	Date	Evidence	References
1	Venezuela	San José de los Caracas, Distrito Federal	10°37'N	66°34'W	25 May 1942	Specimen: male with large testes	COP 18010
2	Colombia	Cartagena, Bolívar	10°24'N	75°32'W	22 January 1915	Specimen (Carnegie Museum, Pittsburgh): incompletely grown juvenile	Carriker (1955), Payne (2005)
3	Panama	Lago Bayano	09°11'N	78°45'W	July 2014	Photo: breeding pair	Campos Cedeño & Vallely (2015)
4	Venezuela	Caicara, Bolívar	07°37'N	66°10'W	10 June 1905	Specimen: female with enlarged ovary	Cherrie (1916)
5	French Guiana	Road D13 to 'Guatemala', Macouria	05°05'N	52°33'W	Late August 2013	Photo and video: breeding pair	This paper
6	Venezuela	Río Sipapo, Caño Cuao (sic), Amazonas	04°58'N	67°43'W	April 1943	Specimens: two males with large testes	COP 22363, 22364
7	Brazil	Fazenda Encrenca, Amajari, Roraima	03°50'N	61°24'W	23 April 2007	Specimen: male in breeding condition	MZUSP 79091 (L. F. Silveira <i>in litt.</i> 2016)
8	Brazil	Igarapé Serrinha, Colonia de Apiatã, Roraima	02°38'N	61°12'W	6 October 1987	Specimen: female with exploded follicles	FMNH 343751 (not 323751; Payne 2005)
9	Brazil	Pousada Rio Trombetas, Oxiriminã, Pará	01°46'N	55°52'W	4 June 2016	Photo: adult carrying food to a nest	N. Lage, WA2159645
10	Brazil	Linhares, Espírito Santo	19°23'S	40°04'W	January 2013	Photo: nestling	M. Candéias, WA864092
11	Brazil	Fazenda Barreiro Rico, São Paulo	22°41'S	48°06'W	November	Specimen (MZUSP): female with egg in oviduct	Magalhães (1999)
12	Paraguay	Reserva Natural del Bosque Mbaracayú, Canindeyú	24°08'S	55°31'W	28 October 1996	Sight record: a pair copulating	Capper <i>et al.</i> (2001)
13	Argentina	Arroyo Uruguay-i, km 30, Misiones	c.25°54'S	c.54°36'W	October to December	Specimens: six birds in breeding condition	Partridge (1961)
14	Argentina	Manchalá, Tucumán	c.27°05'S	c.65°24'W	11 December 1922	Egg	Smyth (1928)
15	Argentina	Arroyo Correa, Río Paraná Delta, Buenos Aires	c.33°43'S	c.59°15'W	18 December 1932	Specimen and nest	Pereyra (1933)

observation point: breast inside the nest, head scarcely visible, and rump and tail raised upright well above the nest rim, as if incubating using the breast. The female maintained this position on the nest, only once rotating by a quarter of a turn during our observations.

On 1 September, the male was seen feeding within 50 m of the nest while the female was incubating (Fig. 4). The male was observed once with a Dark-billed Cuckoo, another austral migrant, without any interaction. Just one call was heard that day, in contrast with frequent calls and songs heard during the preceding days.

On 3 and 7 September, however, the nest was found abandoned and no cuckoos were heard or seen. The regular presence in the area of a large troop of Common Squirrel Monkeys *Saimiri sciureus*, an occasional nest predator (Rylands & Mittermeier 2013), suggests to us that the nest could have been predated. The nest site was impossible to access, meaning that we were unable to climb the tree to examine it.

Other breeding records

All 15 known breeding records are summarised in Table 1 and mapped in Fig. 5. Most reports were inferred from the body condition of specimens. However, a male collected at Chajuraña, Bolívar, in August 1942 (mentioned by Payne 2005) was in fact an immature male without signs of breeding (Colección Ornitológica Phelps, COP 19552; M. Lentino

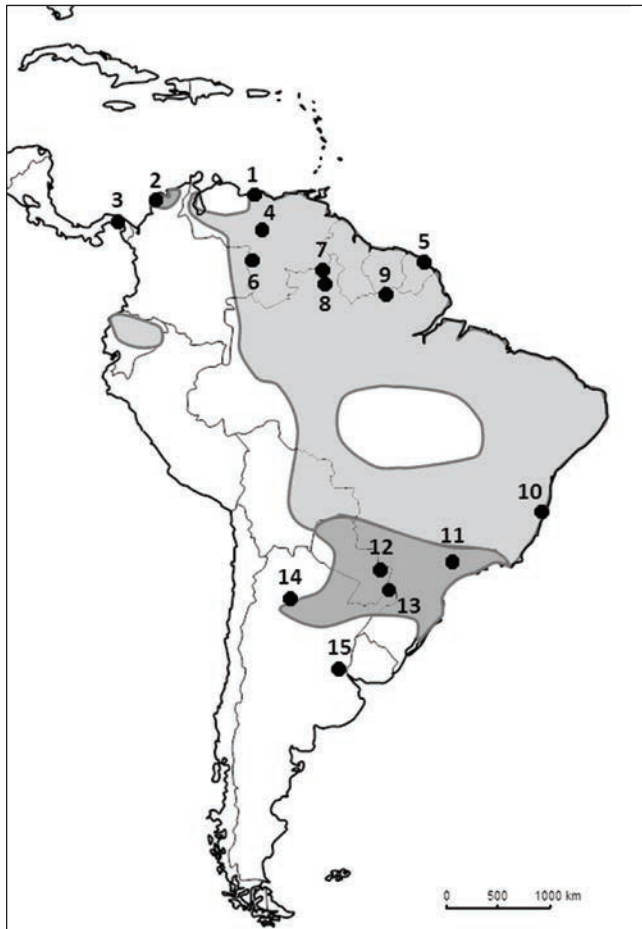


Figure 5. Distribution and breeding records of Pearly-breasted Cuckoo *Coccyzus euleri*. Dark grey = breeding area; pale grey = non-breeding area (after Erritzøe *et al.* 2012). Dots = breeding records. See Table 1.

in litt. 2016). A male and a female collected in June 2001 at Isla Tigrera on the río Caroni, Bolívar, were singing but showed no gonadal development (COP 80345–346; M. Lentino *in litt.* 2016).

Five nests besides that in French Guiana have been found: an egg was collected in Tucumán, Argentina, on 11 December 1922 (Smyth 1928); a nest collected in Buenos Aires province, Argentina, on 18 December 1932 was attributed to *C. americanus* (Pereyra 1933), of which *C. euleri* was considered a subspecies at the time (Willis & Oniki 1990); an almost fledged chick, claimed to be this species, on a nest apparently constructed of twigs, was photographed in Espírito Santo, south-east Brazil, on 18 January 2013 (M. Candeias; [www.wikiaves.com.br WA864092](http://www.wikiaves.com.br/WA864092)); a breeding pair that fledged two young was photographed in Panama in July 2014 and is the first country and Middle American record (Campos Cedeño & Valley 2015); and an adult carrying food to a nearby nest was photographed in Pará, northern Brazil, on 4 June 2016 (N. Lage; WA2159645); the nest was well concealed in dense foliage, 7 m up in a tree, and the nestlings were not seen (N. Lage *in litt.* 2016). Pereyra (1933) and Campos Cedeño & Valley (2015) provided brief descriptions of the species' nest.

In addition, a pair of *C. euleri* was photographed copulating near Manaus, Amazonas (03°05'S, 60°00'W) on 13 July 2014 (R. Czaban *in litt.* 2014; WA1384436). The male fed the female a caterpillar while copulating. They copulated twice, each time after being attracted by playback, and it is assumed that copulation was induced by this. The male answered once by singing briefly prior to copulation. They were not heard or seen again in the following weeks, thus actual breeding was not proven and these birds were perhaps transients (M. Cohn-Haft *in litt.* 2014).

Discussion

Our observations provide new data on the breeding biology of Pearly-breasted Cuckoo. Although superficial, our description of the nest and nest site is in accordance with that photographed in south-east Brazil (M. Candeias; WA864092) and the descriptions by Campos Cedeño & Valley (2015) and N. Lage (*in litt.* 2016). They are similar to other *Coccyzus* (Payne 2005, Erritzøe *et al.* 2012). Unfortunately the nest's inaccessibility and abandonment meant that we could not assess clutch size or incubation period.

Vocal activity was intense during courtship and nestbuilding, but then declined sharply. Our record of the male presenting a small twig or a caterpillar to his mate while copulating is consistent with those of Capper *et al.* (2001) and R. Czaban (WA1384436; *in litt.* 2014). Courtship feeding is the rule in *Coccyzus* (Payne 2005, Erritzøe *et al.* 2012). Ritualised courtship behaviour presumably strengthens the pair bond, demonstrates the male's ability to feed nestlings and / or facilitates copulation acceptance by the female (Lack 1940, Logue 2007).

Czaban's observation provides new insight into the pair bond. That the male copulated in reaction to playback suggests that he might have sought to insure ownership of his mate in face of a supposed rival (R. Czaban *in litt.* 2014, M. Cohn-Haft *in litt.* 2014). As they were not definitely breeding, this could indicate that the birds were paired while on migration or overwintering, a behaviour not previously described for cuckoos (Erritzøe *et al.* 2012).

These observations raise crucial questions concerning the distribution and biology of *C. euleri*. First, what is the true breeding range of the species? It is generally accepted that the species is an austral breeder, nesting in southern Brazil, Paraguay and north-east Argentina, with a large non-breeding range extending north to Venezuela and the Guianas (Erritzøe *et al.* 2012). However, the northern limit of its breeding range is uncertain (Payne 2005). An alternative is to consider a large breeding range covering much of eastern South America (Payne *et al.* 2013), as suggested by the nesting event in French Guiana.

Mapping all of the known breeding records (Fig. 5) reveals two disjunct breeding areas: one in southern South America (southern Brazil, Paraguay and Argentina), and the other in northern South America (eastern Panama, northern Colombia, Venezuela, northernmost Brazil and the Guianas). More than half of the breeding localities in Table 1 lie north of the equator. However, if they represent sites within the species' 'usual' breeding range, then it is surprising that it was previously overlooked in French Guiana and other countries in northern South America with dynamic ornithological communities, e.g. Venezuela. In French Guiana, the first documented records were made as recently as 2009 (Claessens *et al.* 2011) and in Venezuela it is considered to be a vagrant (Hilty 2003). All confirmed records in French Guiana are between 9 August and 17 September, which matches the status of the species being an austral migrant. This leads us to hypothesise that *C. euleri* breeds occasionally outside its normal range, as also suggested by the Roraima record. The multiple records in French Guiana in 2013, vs. the species' rarity in other years, might indicate an exceptional influx, which could promote opportunistic breeding.

The discovery of a nesting pair at 'Guatemala' was made possible only due to multiple factors: it was in an area regularly visited by birdwatchers, who were alert to the species' vocalisations, having watched an individual nearby recently; the birds were discovered before eggs were laid, when they were singing frequently; and the nest was near a road. These circumstances are potentially unlikely to occur again in French Guiana. A few days later, the birds would have been silent and probably have gone overlooked. Had they been further from the road, or the nest out of sight in the forest canopy, the breeding event would never have been noted. It is tempting to speculate that this event was not the first, or last, in the country. In French Guiana, several records were made in September 2010 and late August 2011, including at least five birds in the same area, all by the late A. Renaudier (Claessens & Comité d'Homologation de Guyane 2015). Based on our observations and those of Campos Cedeño & Vallely (2015), we believe that rattle calls, which are the best means of locating the species in the non-breeding areas, are contact or aggressive calls, and indicate the presence of at least two birds.

What is the true breeding season? August and September are usually considered the end of the non-breeding period and the start of return migration by austral migrants. Thus, breeding at this time is highly unexpected. Although nest contents could not be ascertained, the female's behaviour demonstrates that eggs were laid. All but one of the breeding records in the north of the species' range, see Table 1, were in April–October, i.e. the presumed non-breeding period for an austral migrant. Surprisingly, an incompletely grown juvenile collected in January in Colombia (Payne 2005) was found during the austral breeding season, despite being in the Northern Hemisphere.

On the one hand, the paucity and seasonal pattern of records in French Guiana and in neighbouring countries suggest an austral migrant that occasionally breeds outside the 'normal' breeding range. But, on the other hand, the distribution of nesting records suggests two distinct breeding areas, with a prolonged season equating to the Northern Hemisphere pattern in the north of its range. More data are necessary to confirm the species' status in northern South America.

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