Taxonomy, distribution, natural history and conservation of the Russet-mantled Foliage-gleaner Syndactyla dimidiata...

Article *in* Zootaxa · January 2014

DOI: 10.11646/zootaxa.3754.4.5 · Source: PubMed

Zootaxa 3754 (4): 435–449
www.mapress.com/zootaxa/

Article

ISSN 1175-5326 (print edition)
ZOOTAXA
ISSN 1175-5334 (online edition)

http://dx.doi.org/10.11646/zootaxa.3754.4.5
http://zoobank.org/urn:lsid:zoobank.org:pub:5CA8E102-1A57-4396-A576-22B75B1EA9CA

Taxonomy, distribution, natural history and conservation of the Russet-mantled Foliage-gleaner *Syndactyla dimidiata* (Pelzeln, 1859) (Aves: Furnariidae)

LEONARDO ESTEVES LOPES[1] & LUIZ PEDREIRA GONZAGA[2]

[1] *Laboratório de Biologia Animal, Universidade Federal de Viçosa - Campus Florestal, Rodovia LMG-818, km 6, Florestal, Minas Gerais, Brazil, 35690-000. E-mail: leo.cerrado@gmail.com*

[2] *Departamento de Zoologia, Instituto de Biologia, Universidade Federal do Rio de Janeiro, Rio de Janeiro, Rio de Janeiro, Brazil, 21941-971. E-mail: lpg@biologia.ufrj.br*

Abstract

Russet-mantled Foliage-gleaner is an extremely poorly known species, the range of which is centered in the Brazilian Cerrado, where it inhabits riparian forests. Two subspecies are recognized, but the limits of their ranges are controversial. Furthermore, it was recently suggested that the species is one of the few in the family Furnariidae to show sexual dichromatism. In this paper we examined the plumage coloration and morphometrics of 33 study skins (85% of the available specimens). We conclude that the geographic variation and sexual dichromatism reported for *S. dimidiata* originated from misinterpretation of the plumage variation observed in this species, which is best considered monotypic. We also present natural history data on Russet-mantled Foliage-gleaners and suggest considering it a globally Vulnerable species.

Key words: birds, Cerrado, endemism, gallery forest, morphology, Neotropics

Introduction

The Russet-mantled Foliage-gleaner is one of the least known species in the western hemisphere (Robbins & Zimmer 2005), with just a few records spottily distributed in central-southern Brazil and northeastern Paraguay (Peters 1951; Pinto 1978; Ridgely & Tudor 1994; Remsen 2003; Robbins & Zimmer 2005). It is considered endemic to the Cerrado, the largest South American savannah region (Silva & Bates 2002), where it is rare to locally uncommon in lower and middle growth of semi-humid and gallery forests (Ridgely & Tudor 1994; Remsen 2003). Two subspecies are currently recognized, *S. d. dimidiata* and *S. d. baeri* (Dickinson 2003; Remsen 2003; Clements 2007), but their distribution and taxonomic limits are controversial (Peters 1951; Pinto 1978; Ridgely & Tudor 1994; Robbins & Zimmer 2005).

Based on limited sample sizes, Robbins & Zimmer (2005) suggested that there was sexual dichromatism in the underparts of the Paraguayan population of this species, a rare feature among the Furnariidae (Remsen 2003). However, our examination of specimens refuted the hypothesis of sexual dichromatism. Furthermore, our continued studies revealed a series of misunderstandings and a long cascade of errors in the literature that converted a relatively simple taxonomic history into an intricate problem. Here, we assess morphological variation with respect to sex, age and geography, and analyze the validity of the two subspecies. A detailed revision of the taxonomy, nomenclatural history and range of this species is also presented, as well as notes on its natural history and conservation.

Material and methods

Given the rarity of *S. dimidiata* in collections, we tried to locate and examine every available specimen. During our taxonomic studies of other species (see, for example, Lopes & Gonzaga 2012), we visited ten ornithological collections in Brazil, six in North America, and seven in Europe (see acknowledgments). We also checked online

Accepted by T. Chesser: 20 Nov. 2013; published: 16 Jan. 2014

databases, such as the SpeciesLink (http://splink.cria.org.br/) and Ornisnet (http://www.ornisnet.org/) portals (accessed on 2 February 2013). The complete search resulted in the location of 39 specimens prepared as study skins and one prepared as a skeleton (Appendix 1). We did not find any alcohol-preserved specimens.

We examined 33 specimens (24 males, 6 females, 3 sex indeterminate) housed at the following institutions: BMNH, COMB, DZUFMG, FMNH, MNRJ, MPEG, MZUSP, NMW, RECOR, and ZSM (see Appendix 1 for acronyms). This is by far the largest series of *S. dimidiata* ever examined, and includes the three syntypes of *Anabates dimidiatus* Pelzeln, 1859 (NMW 16359, 16360 and 19553), the holotype (ZSM 1911.083) and paratype (ZSM 1911.1648) of *Philydor baeri* Hellmayr, 1911, and the holotype (MNRJ 15608) and all four paratypes (MNRJ 15606, 15607, 15609 and 15610) of *Xenoctistes mirandae* Snethlage, 1928 (see below). We also examined digital photographs of two specimens housed in KUNHM and two in LACM. Therefore, we examined 95% of the existing skins of *S. dimidiata*, 85% of them directly and 10% through photographs.

Our taxonomic analyses were based on morphometric characters and plumage coloration. A dial caliper was used to measure the length of total culmen, closed wing (chord), tail and tarsus (Baldwin *et al.* 1931). All measurements were taken to the nearest 0.1 mm. Color names with notations refer to Munsell (2000).

Locality records were gathered from a comprehensive literature review as well as consultation of several Brazilian and overseas museums (see above). Geographical coordinates were obtained from ornithological gazetteers (Paynter 1989; Paynter & Traylor 1991; Vanzolini 1993) or from Google Earth (http://earth.google.com/).

Searches for this species in the field, as well as observations on its natural history, were conducted during twelve years of intermittent fieldwork in the Cerrado of central Brazil. During this period, LEL spent more than 250 days in the cerrados of Minas Gerais, Goiás, Distrito Federal, Mato Grosso and Tocantins, visiting 45 municipalities (voice playbacks were used in ca. 40% of them). Fieldwork was conducted with several purposes (e.g. Lopes & Braz 2007; Lopes *et al.* 2008b; Lopes *et al.* 2009) and was in no way strictly directed to *S. dimidiata.* Sampled areas covered a wide spectrum of habitat types, from pure grasslands to tall humid forests, but gallery forests were sampled to some extent in all areas visited. It is important to highlight that the use of playback was generally effective for locating territorial individuals in areas where this species was known to occur.

Statistical analysis. Given the small sample size available, and that a preliminary analysis revealed the impossibility of diagnosing the two subspecies of *S. dimidiata* either by range or by plumage characters (see below), we did not conduct any statistical comparisons between the morphometric characters measured. Therefore, results are presented only as mean ± standard deviation without grouping the specimens examined in distinct subspecies. We conducted a Principal Component Analysis (PCA) (Tabachnick & Fidell 2007) to analyze the length of total culmen, closed wing, tail and tarsus. All analyses were performed with the aid of the software STATISTICA 8.0 (StatSoft 2007).

Results and discussion

Taxonomic and nomenclatural history. *Anabates dimidiatus* Pelzeln, 1859, was described from specimens collected in Brazil by Johann Natterer (Pelzeln 1859). Pelzeln (1868–1870) subsequently reported that these specimens were an adult female and two juvenal males collected in "Sangrador" and "Rio Manso", Mato Grosso, in December 1823. The correct location of the sites of Natterer's syntypes is critical, because the presence of homonymous localities in the Rio Paraguay basin in southeastern Mato Grosso has resulted in misplacing of the type localities by some authors (e.g. Pinto 1978; Paynter & Traylor 1991). "Sangrador" is located at 15°39'S, 53°54'W (geographical coordinates from Vanzolini 1993), about 50 km east of the city of Primavera do Leste. This locality corresponds to the headwaters of the Ribeirão Sangradouro Grande, a tributary of the Rio das Mortes. Today this area is protected by the Sangradouro/Volta Grande Indigenous Land, which encompasses roughly 10,000 ha (Souza & Santos 2001). "Rio Manso" is an alternative name, now in disuse, for the Rio das Mortes, one of the main left bank tributaries of the Rio Araguaia. The site visited by Natterer was probably at 15°31'S, 55°14'W (Vanzolini 1993), about 8 km west of the present day city of Campo Verde.

Anabates dimidiatus was completely ignored for almost 50 years. For example, it is absent from the "Catalogue of the Birds in the British Museum" (Sclater 1890) the major ornithological reference book of the time (Poche 1910). This species was first acknowledged by Berlepsch & Hellmayr (1905), who redescribed it after examining the syntypes. These authors transferred this species to the genus *Philydor*, but emphasized that this taxonomic arrangement was tentative, and that probably it would be necessary to erect a new genus for this taxon, which was done subsequently by Pinto (1932), who named the genus *Pseudoxenops* for the species.

Philydor baeri Hellmayr, 1911, was described from an adult male and a juvenal male collected in Água Suja (Hellmayr 1911), western Minas Gerais, Brazil. Morphological similarities between this taxon and *P. dimidiatus* were highlighted since its description (Hellmayr 1911), but *P. baeri* was said to be "much paler throughout; upper parts light olive brown, without any rufescent tinge; superciliaries ochraceous rather than cinnamomeous; loral spot buff instead of whitish; sides of head light ochraceous, without any cinnamon rufous on auriculars; under parts including tail-coverts much paler ochraceous, flanks olive rather than brownish" (Cory & Hellmayr 1925). Cory & Hellmayr (1925) also recognized the similarities between the taxa, suggesting that they were almost certainly conspecific. Nevertheless, given that both taxa were known only from their type series, no taxonomic rearrangement was proposed, because they were judged "too imperfectly known to allow the use of trinomials" (Cory & Hellmayr 1925). Laubmann (1940), after examining freshly collected specimens of *P. baeri* from Paraguay, also suggested that the taxa were conspecific, but did not propose any taxonomic change, because he still considered available material insufficient. Finally, Pinto & Camargo (1955) formally proposed to recognize *P. baeri* as a subspecies of *P. dimidiatus*, which became the prevailing taxonomic treatment (Meyer de Schauensee 1966; Pinto 1978; Vaurie 1980; Ridgely & Tudor 1994; Sick 1997; Dickinson 2003; Remsen 2003; Clements 2007).

Robbins & Zimmer (2005), based on vocal, plumage, and morphological characters, proposed that *P. dimidiatus* is more closely related to the genus *Syndactyla* than to other taxa currently included in *Philydor*, and transferred the species to *Syndactyla* as *S. dimidiata*.

A third species name in this group, *Xenoctistes mirandae* Snethlage, 1928, has been considered a junior synonym of either *S. dimidiata* or *S. baeri* (see below). *Xenoctistes mirandae* was described from a male collected in Olhos d'Água, Rio Roncador, Goiás, and four paratypes, all males, from Ipameri (Goiás) and Planaltina (Distrito Federal) (Snethlage 1928a). A German version of this paper was published elsewhere (Snethlage 1928b), but the Portuguese version has priority, because it was published one month earlier (Gonzaga 1989). It seems that Snethlage (1928a) ignored the existence of *A. dimidiatus* and *P. baeri*, which were not cited in her paper.

It is important to highlight that *Xenoctistes* Hellmayr, 1925, was proposed as a substitute name for *Syndactyla* Reichenbach, 1853, on grounds of homonymy of this name with *Syndactylus* Boitard, 1842 (Mammalia). Nevertheless, Hellmayr's supposition is erroneous, and *Syndactyla* Reichenbach, 1853, is a valid generic name, resulting in the combination *Syndactyla mirandae* (Peters 1951; Novaes 1953). Thus, Emilie Snethlage was the first ornithologist to recognize the close affinity between the Russet-mantled Foliage-gleaner and other members of the genus *Syndactyla.*

Syndactyla mirandae was treated as a species separate from *P. dimidiatus* for 25 years (e.g. Pinto 1938; Peters 1951), even after Laubmann (1940) noted that it might be related to the Russet-mantled Foliage-gleaner. Finally, Novaes (1953) demonstrated that *S. mirandae* was indistinguishable from *S. d. dimidiata*. This conclusion was later misinterpreted by some authors, who erroneously considered *S. mirandae* a junior synonym of *S. d. baeri* (e.g. Pinto 1978; Remsen 2003).

Range limits of taxa through time. Until the end of the 1920's, *S. d. dimidiata* and *S. d. baeri* were known only from their type series. When specimens of *S. dimidiata* were collected by Snethlage (1928a), as mentioned above, she apparently was not aware of the existence of those names. In turn, Pinto (1932), either ignoring Snethlage's papers or misled by her own failure to recognize the birds described by Pelzeln and Hellmayr, was the first to explicitly communicate the rediscovery of *S. d. dimidiata* after he collected a specimen in Santana do Paranaíba, northeastern Mato Grosso do Sul. This site is in the Rio Santana basin, about 15 km upriver from its mouth in the Rio Paranaíba, which, after joining the Rio Grande, forms the large Rio Paraná. Soon after that, Pinto (1940) found this taxon again, in the Fazenda Recreio, Coxim, northern Mato Grosso do Sul.

The first records of the Russet-mantled Foliage-gleaner from Paraguay were two males collected in the northeastern portion of that country (Laubmann 1940). Laubmann compared these specimens with the types of *Anabates dimidiatus* and *Philydor baeri*, and wrote that the Paraguayan specimens were more similar to *S. d. baeri* than to *S. d. dimidiata,* which is surprising because the latter would be expected by range.

Laubmann (1940) also reported supposed specimens of *S. d. baeri* (at FMNH) collected at Chapada dos Veadeiros, northern Goiás, although he did not personally examine the specimens. Peters (1951) adopted the range limits proposed by Laubmann (1940). Novaes (1953) assigned the specimens collected by Snethlage in southern and western Goiás to *S. d. dimidiata*. This is problematic in terms of biogeography, because specimens collected by Snethlage were obtained at sites between localities of *S. d. baeri* in extreme western Minas Gerais (Hellmayr 1911) and northern Goiás (Laubmann 1940). Pinto & Camargo (1955) collected a male in Porto Camargo, Paraná, referring it to *S. d. baeri*, which resulted in an additional biogeographical inconsistency, because the specimen from Santana do Paranaíba, previously referred to *S. d. dimidiata* (Pinto 1932), was obtained in an intermediate position between Porto Camargo and the type locality of *Philydor baeri*. We emphasize that these three localities are in the Rio Paraná basin.

The taxonomy and range limits of Russet-mantled Foliage-gleaners received little attention for almost four decades, until Ridgely & Tudor (1994) referred Paraguayan birds to the nominotypical subspecies, without presenting the rationale. This is surprising, because Laubmann (1940), who personally examined the types of both names, clearly stated that the Paraguayan specimens belonged to *S. d. baeri.* Therefore, there is no agreement in the literature about the exact range of the two subspecies of *S. dimidiata*. The causes of such disagreement will be discussed in the next section.

Plumage variation. Our analysis of plumage coloration revealed substantial individual variation. A general description of the plumage coloration of the definitive-plumaged specimens in the type series of *Anabates dimidiatus* and *Philydor baeri* (Table 1) provides a basis for the interpretation of the morphological variation observed. Although the types of both names were collected more than a century ago and are slightly faded, especially the type of *A. dimidiatus*, we think that the degree of color change observed does not significantly influence our conclusions. This is because the topotypical specimens of *S. d. baeri* freshly collected by us (DZUFMG 5858 and 5859) differed little from the type specimens.

TABLE 1. Plumage coloration of definitive-plumaged type specimens of *Anabates dimidiatus* Pelzeln, 1859, and *Philydor baeri* Hellmayr, 1911. Color names and color notations follow Munsell (2000).

Feather tract	*Anabates dimidiatus* NMW 16359	*Philydor baeri* ZSM 1911.083 and 1911.1648
Pileum	dark brown (10YR 3/3)	dark yellowish brown (10YR 3/4)
Superciliary line	strong brown (7.5YR 5/8)	strong brown (7.5YR 5/8)
Cheek	strong brown (7.5YR 5/8)	reddish yellow (7.5YR 6/8)
Back	dark yellowish brown (10YR 3/4)	dark yellowish brown (10YR 3/4)
Chest and breast*	strong brown (7.5YR 5/6)	brownish yellow (10YR 6/8)
Abdomen	strong brown (7.5YR 5/6)	yellowish brown (10YR 5/6)
Remiges	dark brown (7.5YR 3/4)	dark yellowish brown (10YR 3/4)
Upper tail coverts	reddish brown (5YR 4/4)	dark reddish brown (5YR 3/4)
Rectrices	dark reddish brown (5YR 3/4)	dark reddish brown (5YR 3/4)

*In both taxa the borders of chest and breast feathers are slightly darker than their centers. This feature is particularly noticeable in *P. baeri* (borders of these feathers reach 10YR 5/8), resulting in a slightly flammulated appearance.

The specimens examined fall within a continuous spectrum of color variation, ranging from predominantly dull ochraceous to ochraceous rufous tones in the underparts (Figure 1), as described by Remsen (2003) for the extremes of color variation in this species. Dull ochraceous birds tend to be slightly flammulated in the venter, while in ochraceous rufous birds this feature is absent. Flammulation in the venter of intermediate birds is barely noticeable.

Birds with predominantly dull ochraceous tones, which include the type specimens of *P. baeri*, are found in almost the entire range of Russet-mantled Foliage-gleaners, including Paraguay, extreme western Minas Gerais ("Triângulo Mineiro" region), Distrito Federal, northern Goiás and southern Bahia. Birds with predominantly ochraceous rufous tones (slightly darker and more reddish than the type series of *A. dimidiatus*) are found in the Distrito Federal and in northern and northeastern Mato Grosso do Sul. Typical *S. d. dimidiata* (slightly less rufescent than the ochraceous rufous specimens) are found in Mato Grosso, Distrito Federal, and probably in Paraguay, based on the description presented by Robbins & Zimmer (2005) of the male at MNHNP (not numbered?), which was not examined by us. Birds intermediate between *S. d. baeri* and *S. d. dimidiata* are found in central and southern Goiás, central and western Minas Gerais, and northwestern Paraná (Figure 2). Therefore, no clear pattern of geographical variation was observed, and, in some areas, specimens with predominantly dull ochraceous tones (e.g. MPEG 42236) and specimens with predominantly ochraceous rufous tones (e.g. DZUFMG 6165, Figure 1) were collected at the same locality (note that both are females). The same seems to occur in the Parque Nacional San Luis, Paraguay, where dull ochraceous specimens occur side by side with ochraceous rufous specimens (see above). The evidences outlined above indicate that the two subspecies currently accepted cannot be recognized on the basis of plumage coloration.

FIGURE 1. Extremes of chromatic variation in *Syndactyla dimidiata.* Above: male (DZUFMG 5859) collected at the type locality of *Philydor baeri,* state of Minas Gerais. Note its predominantly dull ochraceous tones. Below: female (DZUFMG 6165) collected in the Distrito Federal. Note its predominantly ochraceous rufous tones.

We did not find evidence of sexual dichromatism among the specimens examined, *contra* Robbins & Zimmer (2005). Males and females collected at the same locality were indistinguishable (e.g. DZUFMG 5858 and 5859), and specimens of both sexes where classified in each one of the four chromatic patterns identified in Figure 2.

Juvenal birds can be readily recognized by their whitish chin and throat, with feathers tipped dark brown (10YR 3/3). Feathers from the breast and abdomen of juvenal birds are also tipped dark brown (Pelzeln 1859; Hellmayr 1911; Vaurie 1980; Vasconcelos *et al.* 2012, pers. obs.). Birds in the first basic plumage were not undoubtedly identified by us, and although the possibility that the variation observed could be age-related cannot be completely discarded, it is an unlikely explanation for the alleged plumage dichromatism. This is because members of Philydorinae (sensu Ohlson *et al.* 2013) generally present no or only subtle differences between definitive and first basic plumages (Remsen 2003, pers. obs.).

We suppose that the sexual dichromatism reported by Robbins & Zimmer (2005) originated from misinterpretation of the morphological variation observed in *S. dimidiata*. This was probably due to the small series examined by those authors, as well as to lack of access to key papers published by earlier naturalists, especially those written in Portuguese, such as Snethlage (1928a) and Novaes (1953).

A careful reading of the acknowledgments in Robbins & Zimmer (2005) reveals that only six of the 22 specimens cited in the text were examined directly. These specimens are three males from northern Goiás (FMNH 75118; LACM 39956 and 39957) and two females (KUNHM 88362 and 88363) and a male from Paraguay (MNHNP not numbered?). All the remaining specimens cited were examined only through digital photographs. Thus, given that the KUNHM female specimens (from Paraguay) agree with the type series of *P. baeri* and that the

LACM male specimens (from northern Goiás) agree with the type series of *A. dimidiatus* (see Robbins & Zimmer 2005, Fig. 4, pg. 222), we conclude that the reported sexual dichromatism of this species is a misinterpretation of the plumage variation of *S. dimidiata*.

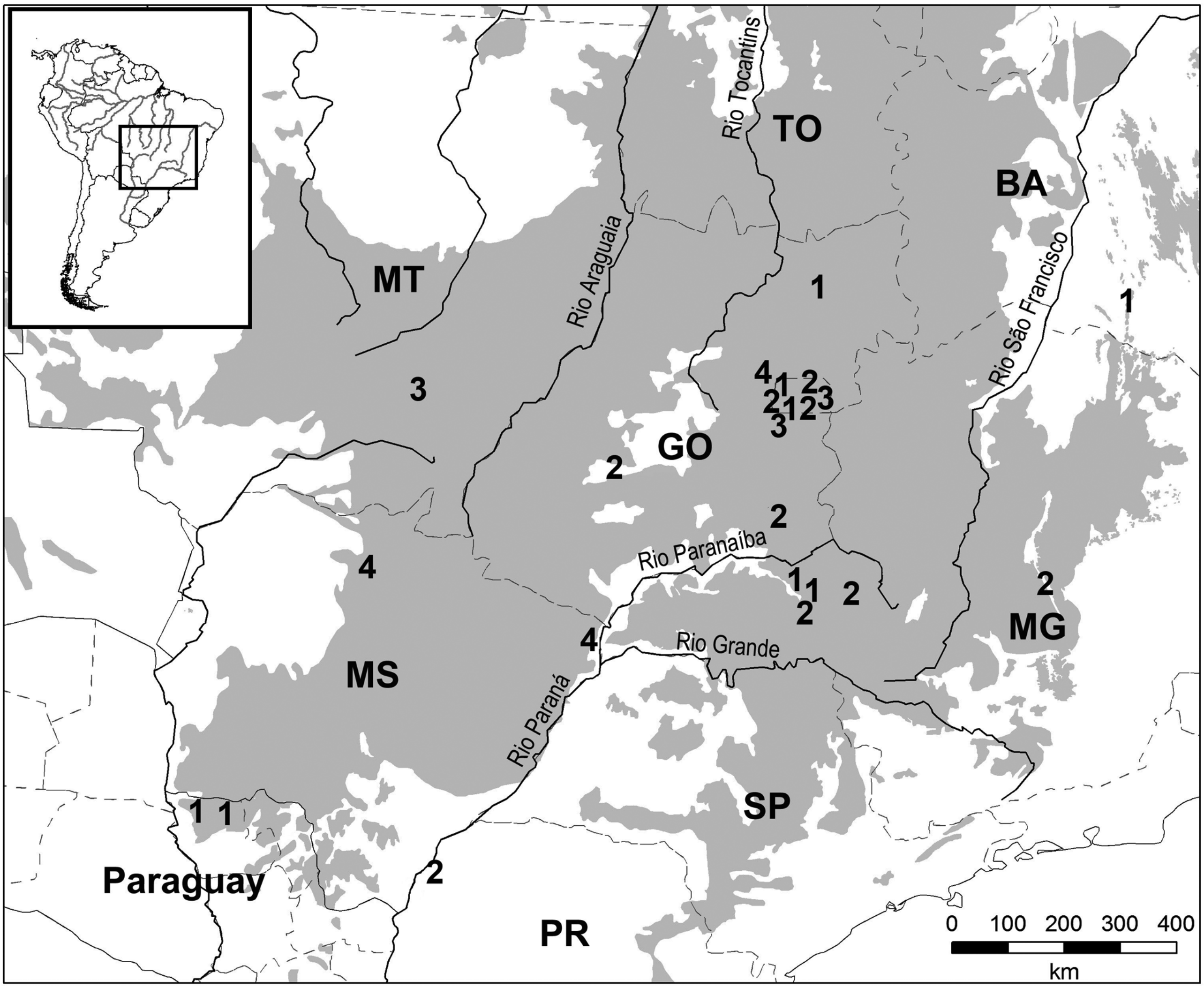


FIGURE 2. Geographical distribution of chromatic variation in *Syndactyla dimidiata*. Numbers indicate the coloration of the specimens examined, being: 1—birds with predominantly dull ochraceous tones, such as the type of *P. baeri*; 2—birds intermediate between the types of *P. baeri* and of *A. dimidiatus*; 3—rufescent-brown birds such as the type of *A. dimidiatus* and 4—birds with predominantly ochraceous rufous tones. Note that the chromatic variation observed in this species is continuous, and that the division presented here is somewhat arbitrary. Only definitive-plumaged specimens that were personally examined were included. Brazilian states are indicated as follows: TO—Tocantins, BA—Bahia, GO—Goiás, MT—Mato Grosso, MS—Mato Grosso do Sul, MG—Minas Gerais, SP—São Paulo, PR—Paraná.

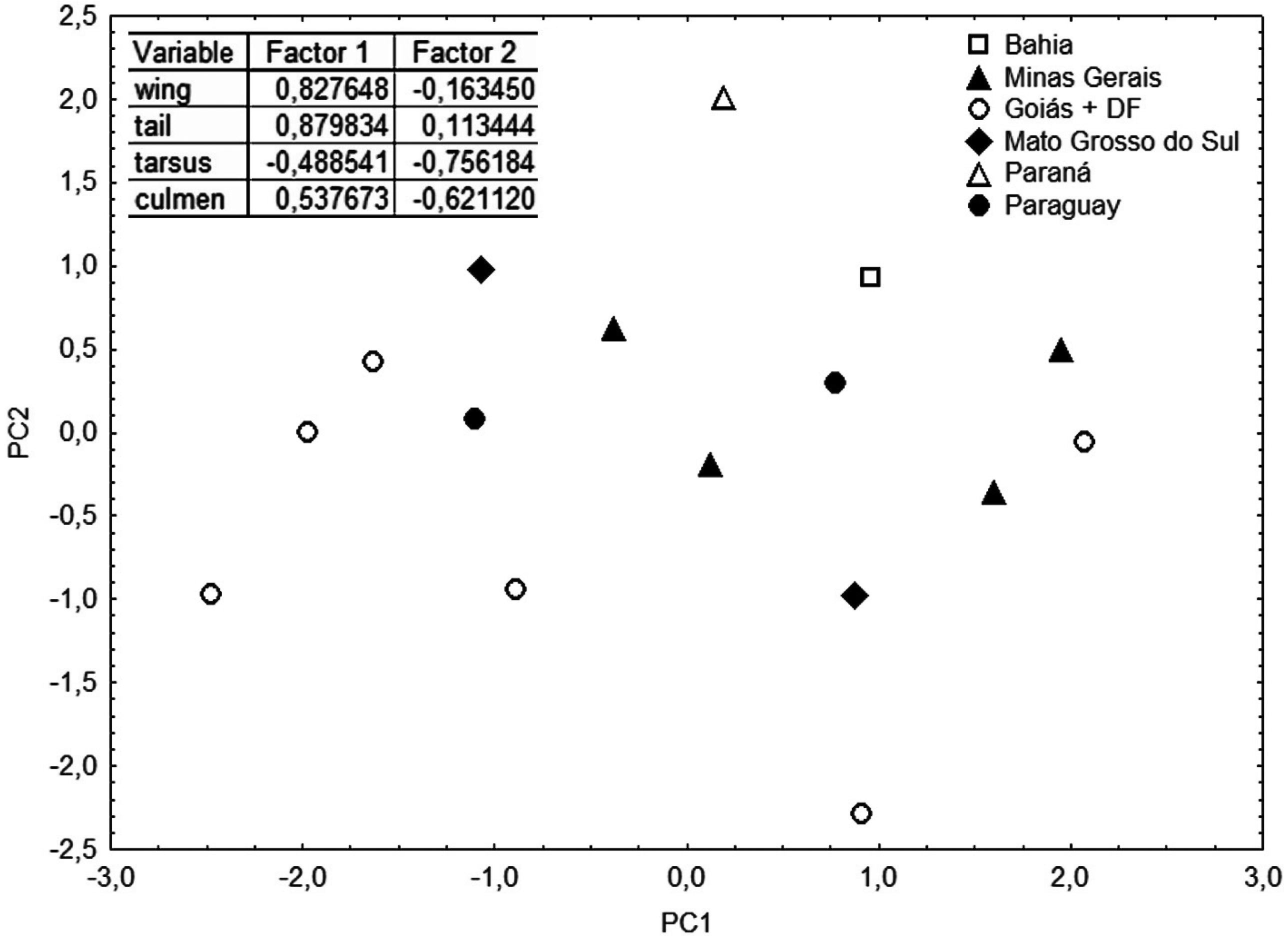
Given that the chromatic variation observed in this species cannot be explained by geography, sex or, probably, age, and that extreme specimens can be observed side by side at the same site, a considerable degree of polymorphism is the most likely explanation for the chromatic variation observed in *S. dimidiata*. Such unexplained individual variation is, to the best of our knowledge, not found in any other species in the family Furnaridae, and this unusual trait is the key to the taxonomic problem in this species.

Morphometry. The PCA of measurements (Table 2) did not reveal any distinct groups (Figure 3), suggesting that, as with plumage coloration, the two subspecies currently accepted cannot be recognized on the basis of morphometric characters.

Body weight. Robbins & Zimmer (2005) stated that they were the first to present data on body weight and soft parts colors for this species, but Cavalcanti & Marini (1993) reported a mean ± SD weight of 29.4 ± 1.5 g, ranging from 27 g to 32 g, for ten unsexed specimens mist-netted in Distrito Federal, Brazil. Body weights (g) from definitive-plumaged specimens housed in BMNH, DZUFMG, MNRJ and MPEG were: 28.5, 29.0, 29.7 and 30 (females) and 30.0, 31.0 and 31.0 (males).

TABLE 2. Morphometric measurements for *Syndactyla dimidiata*. Specimens not in definitive plumage were excluded. All measurements are in mm. Given the small sample size, no statistical analysis was performed.

Character	Sex	Mean	SD	Min–Max	n
Wing length	♂	85.6	2.45	82.3–90.0	17
	♀	82.4	1.24	81.2–84.1	4
Tail length	♂	77.0	2.77	71.5–80.9	17
	♀	76.0	0.57	75.2.–76.5	4
Tarsus length	♂	22.0	0.81	20.7–23.4	17
	♀	21.4	1.26	20.2–23.0	4
Culmen length	♂	20.7	0.61	19.6–21.6	16
	♀	20.9	0.83	20.3–22.1	4



Variable	Factor 1	Factor 2
wing	0,827648	-0,163450
tail	0,879834	0,113444
tarsus	-0,488541	-0,756184
culmen	0,537673	-0,621120

FIGURE 3. Scatterplots of the first versus the second principal component scores of a Principal Component Analysis of the morphometric variables measured from male specimens of *Syndactyla dimidiata* (see Table 2). Given the small sample size, we did not perform a PCA analysis for females. Factor loadings are presented as a table in the upper left corner of the figure. The first principal component (PC1) accounted for 49.7% of the variation, and the second principal component (PC2) explained 24.9%.

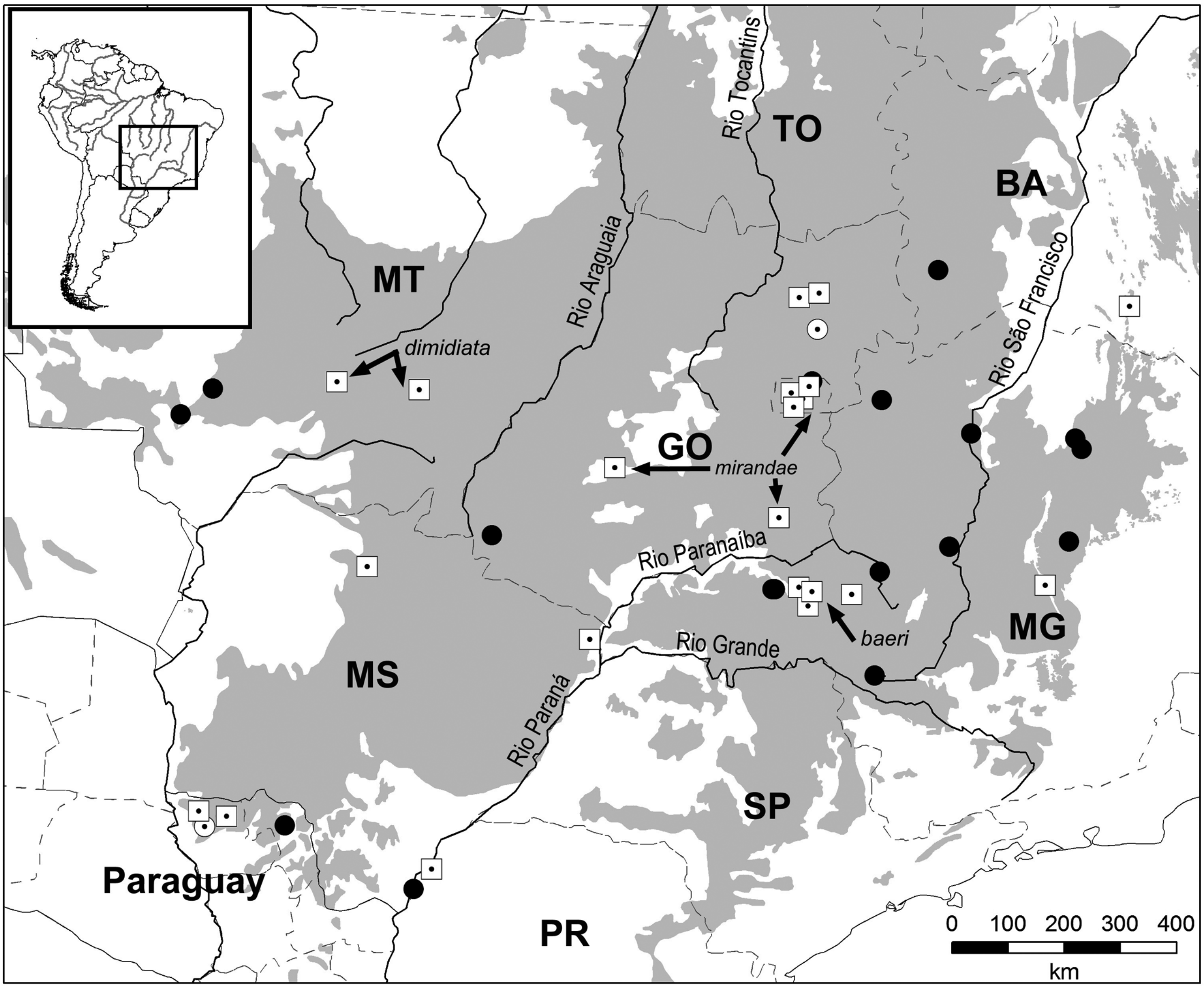


FIGURE 4. Range of *Syndactyla dimidiata* based on personally examined specimens (white squares), digital photographs of specimens (white circles) and published sight records (black circles). See Appendix 1. Black arrows indicate the type localities of *Anabates dimidiatus* Pelzeln, 1859, *Philydor baeri* Hellmayr, 1911, and *Xenoctistes mirandae* Snethlage, 1928. Grey shading indicates the limits of Cerrado vegetation (see Lopes 2008). See Fig. 2 for abbreviations of Brazilian states.

Soft parts colors. Snethlage (1928a) stated that the five specimens she collected in Goiás and Distrito Federal, Brazil, had the iris "brown", the tarsus "olive gray" or "olive brown", the maxilla "blackish" and the mandible "gray" or "light gray". The complete handwritten notes on the labels of these specimens, including soft parts colors, stomach contents, habitat, and association with mixed-species flocks, were transcribed by Gonzaga (1989). Specimens collected by us exhibited similar soft parts colors.

Taxonomic and nomenclatural conclusions. Given the lack of diagnosability, or even differentiation, between the two subspecies of Russet-mantled Foliage-gleaners, we propose considering *Syndactyla dimidiata* (Pelzeln, 1859) as monotypic. *Philydor baeri* Hellmayr, 1911, thus becomes a junior subjective synonym of *Anabates dimidiatus* Pelzeln, 1859. A synonymy for this species, as well as a detailed revision of its natural history and conservation status, is presented below:

Syndactyla dimidiata (Pelzeln, 1859)

Anabates dimidiatus Pelzeln, 1859
Philydor dimidiatus (Pelzeln, 1859) Berlepsch & Hellmayr, 1905
Pseudoxenops dimidiatus (Pelzeln, 1859) Pinto, 1932

Xenoctistes mirandae Snethlage, 1928
Syndactyla mirandae (Snethlage, 1928) Novaes, 1953
Philydor baeri Hellmayr, 1911
Pseudoxenops baeri (Hellmayr, 1911) Pinto, 1938
Syndactyla dimidiata baeri (Hellmayr, 1911) Robbins & Zimmer, 2005

Range. *Syndactyla dimidiata* is widely distributed throughout the Brazilian Cerrado, with confirmed records from southern Mato Grosso, Mato Grosso do Sul, Goiás, southern Bahia, Minas Gerais, and western Paraná, also reaching northeastern Paraguay (Figure 4), with elevations ranging from 150 m to 1250 m a.s.l.

Several doubtful or erroneous records of this species exist: 1) Although it is said to occur in the Pantanal (Dubs 1992), there is no confirmed record of *S. dimidiata* for this region (Tubelis & Tomas 2003); 2) A record from the Rio Tibagi valley, Paraná, where this species has been considered rare (Anjos & Schuchmann 1997; Anjos *et al.* 1997), cannot be accepted either. Although this region has extensive grasslands, harboring some species typical of open Cerrado, birds restricted to gallery forests of the Cerrado have not been found there, where forests are dominated by the gymnosperm *Araucaria angustifolia* (Anjos & Graf 1993). This record has also not been accepted by Straube (2004), because it is from a region with "phytophysiognomy, climate and topography unsuitable with the range and ecological requirements" of this species. Furthermore, it seems that some kind of typographical error occurred, because Anjos & Schuchmann (1997) cited Anjos & Graf (1993) as the source of the record of *S. dimidiata* for Paraná, which is not verified in that publication. For other inconsistencies on the natural history data presented by Anjos and co-authors, see Vallejos & Morimoto (2012); 3) Peters (1951) included the "Fazenda Transvaal, [municipality of] Rio Verde" in the range of *S. d. baeri*, and Pinto (1978) also included "Rio Verde" in its range, probably following Peters (1951). The Fazenda Transvaal was surveyed by Walter Garbe from March to June 1940 and from April to November 1941 (Pinto 1945). Given that no specimen of *S. dimidiata* from this locality is housed in MZUSP or in MCZ, where the material collected by Garbe is deposited (Pinto 1945), we consider the occurrence of *S. dimidiata* at this locality to be invalid; 4) The record in Straube (2004) for Rio Paracaí is an error (Straube *in litt.*).

Habitat. *Syndactyla dimidiata* is a locally uncommon species, being absent from many apparently suitable riparian habitats. It was not possible to identify clear habitat preferences in the three localities where this species has been recorded by the senior author, as follows: 1) In the Fazenda Água Limpa, one pair was observed in a preserved gallery forest about 150–200 m wide, with a canopy about 10–15 m tall, immersed in a matrix of open Cerrado vegetation. This forest bordered the Córrego Capetinga, which flowed between high banks about 1–3 m tall that evidently protect this forest from flooding. Botanical information about this gallery forest can be found elsewhere (Seabra *et al.* 1991; Ribeiro & Felfili 2009); 2) In the Fazenda Monte Carmelo, two specimen were collected in a seasonally flooded gallery forest about 15–20 m tall, with open understory. Although the forest was well preserved, probably pristine, all the adjacent savannas and grasslands have been replaced by eucalyptus plantations; 3) In Santa Marta, where the species was not collected, the gallery forest was narrow (ca. 50 m wide) and about 8–10 m tall. The understory was dominated by vine tangles. Patches of the original vegetation on the surroundings of the gallery forest have been logged and replaced by subsistence crops, but otherwise the matrix was covered by open cerrado vegetation.

Information available in the literature or on specimen labels also did not help to understand the habitat requirements of this species. In Minas Gerais and Paraguay, Robbins & Zimmer (2005) found it in dense vine-tangle dominated understory of semi-humid forests. These authors also observed this species in Brasília, where it inhabited semi-humid gallery forests. The specimens BMNH 1984.1.6 and MNRJ 33235 were collected at the border of a "flooded gallery forest".

We wrote to several colleagues who have had previous experience with this species in an attempt to gather further information on its habitat requirements. Marcelo Ferreira de Vasconcelos (pers. com.) reported that the specimens collected by him in the Brejinho das Ametistas (Vasconcelos *et al.* 2012) were obtained in a well preserved unflooded gallery forest, about 15–20 m tall and 50 m wide. The adjacent matrix was covered by reasonably well preserved open cerrado. Records from the Chapada do Catuni (Vasconcelos et al. 2006) were obtained in a gallery forest, parts of which flood seasonally (M.F. Vasconcelos, pers. com.). Gustavo Malacco (pers. com.) informed us that this species is more frequently found in well preserved seasonally flooded gallery forests in the Triângulo Mineiro region, extreme western of Minas Gerais. Wagner Nogueira observed this species in dense vine-tangle dominated understory of semi-humid forests. He noted that it is generally found in the wettest portions of the forests, generally on or near permanently flooded forests or even "veredas" (*Mauritia* palm swamps).

Therefore, it seems that *S. dimidiata* prefers well preserved gallery forests with dense undergrowth, especially in areas that flood at least seasonally. This species seems to tolerate some degree of disturbance of the matrix within which gallery forests occur, but it apparently is not tolerant to severe disturbances in the gallery forests where it lives. Maybe this is the reason why we failed to locate this species in the disturbed gallery forests briefly sampled by us in the municipalities of Ipameri, São João da Aliança and Planaltina, where it was known to occur in the past (Appendix 1). We still have much to learn about this species' natural history in order to better understand its rarity and local occurrence.

Conservation. Although *S. dimidiata* has been previously considered a globally Near-threatened species (Collar *et al.* 1994), it is presently a "Least Concern" species (BirdLife International 2013). In Brazil it is also a "Least Concern" species, even though it is Endangered in Minas Gerais (COPAM 2010) and Critically Endangered in Paraná (Straube *et al.* 2004), where it had been listed as probably extinct by previous authors (Scherer-Neto & Straube 1995; Straube & Bornschein 1995). In Paraguay, where this species is rare, it is considered Endangered (Guyra Paraguay 2005). It has been recorded in several Brazilian protected areas, namely Fazenda Água Limpa (Motta-Junior 1991), Reserva Ecológica do IBGE (Motta-Junior 1991), Parque Nacional de Brasília (Ridgely & Tudor 1994), Estação Ecológica de Águas Emendadas (Bagno 1998), Parque Nacional das Emas (Pacheco 1995), and Parque Nacional da Serra da Canastra (Silveira 1998). The species also occurs in two protected areas in Paraguay: Parque Nacional Cerro Corá (Hayes & Scharf 1995) and Parque Nacional Serranía San Luis (Robbins *et al.* 1999). However, *S. dimidiata* does not seem to be common in any of the above cited conservation units.

The small number of specimens found in ornithological collections, and the scarcity of records in the literature or in sound archives (e.g. Macaulay Library, http://macaulaylibrary.org/), are strong evidence of the natural rarity of the species. This hypothesis is supported by comparing the number of records of this species published in the WikiAves (http://en.wikiaves.com) with those of *Hylocryptus rectirostris*, another Cerrado endemic furnariid restricted to gallery forests. There are records of *S. dimidiata* for 14 municipalities in three Brazilian states, while there are records of *H. rectirostris* for 102 municipalities in eight states (data accessed on 16 July 2013). The WikiAves portal is a free tool for online publication of photos and sounds of Brazilian birds, and has proved to be an invaluable source of records of rare and elusive species (e.g., Lopes & Gonzaga 2013).

Furthermore, *S. dimidiata* is endemic to the Cerrado, one of the Brazilian biogeographic domains suffering major anthropogenic impacts (Klink & Machado 2005). Although the most recent land cover mapping of the Cerrado revealed that 61% of its area was still covered by natural vegetation, non-anthropogenic areas are concentrated in its northern portion, in the states of Tocantins, Maranhão and Piauí (Sano *et al.* 2010), where the species does not occur. Only 15% of the southern Cerrado, where the range of the species is centered, remains intact (Sano *et al.* 2010).

Marini et al. (2009b) investigated future climate-driven change on the distribution of 26 broad-range birds from the Cerrado, and found that climate change will not equally affect all Cerrado birds. These authors found that *S. dimidiata* is one of the three species predicted to suffer the most from climate change, with a range loss of 69% by 2099 under a full dispersion scenario, and a range shift of about 300 km to the southeast. The direction of range change is toward the most developed and populated region of Brazil (Marini *et al.* 2009b), where patches of natural vegetation are small and highly fragmented (Sano *et al.* 2010). A few large reserves (e.g. Emas, Brasília, and Serra da Canastra National Parks) should protect some populations, but there are still large gaps in protected areas for this species (Marini *et al.* 2009a). Given the reasons above, we suggest considering this species as globally Vulnerable under the criteria C2ai of IUCN (2001), which means "continuing decline, observed, projected, or inferred, in numbers of mature individuals" and "no subpopulation estimated to contain more than 1000 mature individuals".

Acknowledgments

LEL received a doctoral fellowship and grants (APQ-04082-10) from Fundação de Amparo à Pesquisa do Estado de Minas Gerais, and benefited from a collection study grant from the American Museum of Natural History and grants from Fundação Arthur Bernardes (FUNARPEX 2010–2011, FUNARPEQ 2012). Anderson Chaves, Eduardo Alteff, Guilherme Freitas, Gustavo Malacco, Marcelo Vasconcelos, Santos D'Angelo Neto and Wagner Nogueira helped during fieldwork and/or with natural history data. IBAMA and ICMBio provided collecting permits. The following museum personnel kindly allowed us to study material under their care: Hein van Grouw and Mark Adams (BMNH), Miguel Marini (COMB), Marcos Rodrigues (DZUFMG), Ben Marks and John Bates (FMNH), Marcos Raposo and Jorge Nacinovic (MNRJ), Alexandre Aleixo and Maria de Fátima Lima (MPEG), Luis Fábio Silveira (MZUSP), Anita Gamauf and Hans-Martin Berg (NMW), Marina Resende (RECOR), and Markus Unsöld (ZSM). The following museums kindly made their collection databases available online: KUNHM, LACM, MCZ and USNM. Mark Robbins provided digital photographs of specimens housed in KUNHM and LACM. Marcos Rodrigues, Fernando Straube, James Remsen, Mark Robbins and Terry Chesser provided constructive criticism on an earlier version of this manuscript.

References

Anjos, L. & Graf, V. (1993) Riqueza de aves da Fazenda Santa Rita, região dos Campos Gerais, Palmeira, Paraná, Brasil. *Revista Brasileira de Zoologia*, 10, 673–693.
http://dx.doi.org/10.1590/S0101-81751993000400013

Anjos, L. & Schuchmann, K.-L. (1997) Biogeographical affinities of the avifauna of the Tibagi river basin, Paraná drainage system, southern Brazil. *Ecotropica*, 3, 43–65.

Anjos, L., Schuchmman, K.-L. & Berndt, R. (1997) Avifaunal composition, species richness, and status in the River Tibagi basin, Paraná State, southern Brazil. *Ornitología Neotropical*, 8, 145–173.

Bagno, M.A. (1998) As aves da Estação Ecológica de Águas Emendadas. *In:* Marinho-Filho, J., Rodrigues, F. & Guimarães, M. (Eds), *Vertebrados da Estação Ecológica de Águas Emendadas: história natural e ecologia em um fragmento de Cerrado do Brasil central*. SEMATEC, IEMA, IBAMA, Brasília, Brazil, pp. 22–33.

Baldwin, S.P., Oberholser, H.C. & Worley, L.G. (1931) Measurements of birds. *Scientific Publications of the Cleveland Museum of Natural History*, 5, 1–164.

Berlepsch, H.G., von & Hellmayr, C.E. (1905) Studien über wenig bekannte Typen neotropischer Vögel. *Journal für Ornithologie*, 53, 1–33.
http://dx.doi.org/10.1007/BF02089385

BirdLife International (2013*) Species factsheet:* Syndactyla dimidiata. BirdLife International. Available from: http://www.birdlife.org (2 February 2013)

Cavalcanti, R.B. & Marini, M.Â. (1993) Body masses of birds of the cerrado region, Brazil. *Bulletin of the British Ornithologist's Club*, 113, 209–212.

Clements, J.F. (2007) *The Clements checklist of the birds of the World*. Cornell University Press, New York, USA, 843 pp.

Collar, N.J., Crosby, M.J. & Stattersfield, A.J. (1994) *Birds to watch 2: the World list of treatened birds*. BirdLife International, Cambridge, UK, 407 pp.

COPAM (2010) Deliberação Normativa COPAM No. 147, de 30 de abril de 2010, Lista de espécies ameaçadas de extinção da fauna do estado de Minas Gerais. *Minas Gerais*, 4 May 2010.

Cory, C.B. & Hellmayr, C.E. (1925) Catalogue of birds of the Americas and the adjacent islands in Field Museum of Natural History, part IV, Furnariidae, Dendrocolaptidae. *Field Museum of Natural History Publications, Zoological Series*, 13, 1–390.

Dickinson, E.C. (Ed) (2003) *The Howard and Moore complete checklist of the birds of the World, 3rd ed.* Princeton University Press, Princeton, USA, 1039 pp.

Dubs, B. (1992) *Birds of southwestern Brazil: catalogue and guide to the birds of the Pantanal of Mato Grosso and its border areas*. Bertrona-Verlag, Bertrona, Germany, 164 pp.

FUNATURA (1994) *Plano de manejo do Santuário de Vida Silvestre São Miguel*. Editora Linker Sun, Brasília, Brazil, 82 pp.

Gonzaga, L.P. (1989) Catálogo dos tipos na coleção ornitológica do Museu Nacional. II—Passeriformes. *Boletim do Museu Paraense Emílio Goeldi, Série Zoologia*, 5, 41–69.

Guyra Paraguay (2005) *Atlas de las aves de Paraguay*. Guyra Paraguay, Asunción, Paraguay, 212 pp.

Hayes, F.E. (1995) *Status, distribution and biogeography of the birds of Paraguay*. American Birding Association, New York, USA, 224 pp.

Hayes, F.E. & Scharf, P.A. (1995) The Birds of Parque Nacional Cerro Corá, Paraguay. *Cotinga*, 4, 20–24.

Hellmayr, C.E. (1911) Description de trois nouvelles especes d'oiseaux des familles de Dendrocolaptidés et Formicariidés. *L'Oiseau et la Revue Française d'Ornithologie*, 24, 49–51.

IUCN (2001) *IUCN Red List Categories and Criteria, version 3.1*. International Union for Conservation of Nature and Natural Resources, Gland, Switzerland, ii + 30 pp.

Klink, C.A. & Machado, R.B. (2005) Conservation of the Brazilian Cerrado. *Conservation Biology*, 19, 707–713.
http://dx.doi.org/10.1111/j.1523-1739.2005.00702.x

Laubmann, A. (1940) *Wissenschaftliche Ergebnisse der Deutschen Gran Chaco-Expedition: Die Vögel von Paraguay. Vol. 2*. Strecker und Schröder, Stuttgart, Germany, 228 pp.

Lopes, L.E. (2008) The range of the Curl-crested Jay: lessons for evaluating bird endemism in the South American Cerrado. *Diversity and Distributions*, 14, 561–568.
http://dx.doi.org/10.1111/j.1472-4642.2007.00441.x

Lopes, L.E. & Braz, V.S. (2007) Aves da região de Pedro Afonso, Tocantins, Brasil. *Revista Brasileira de Ornitologia*, 15, 530–537.

Lopes, L.E. & Gonzaga, L.A.P. (2012) Clinal pattern of morphological variation in *Sakesphorus luctuosus* (Lichtenstein, 1823), with comments on the enigmatic *Sakesphorus hagmanni* Miranda-Ribeiro, 1927 (Passeriformes: Thamnophilidae). *Zootaxa*, 3569, 41–54.

Lopes, L.E. & Gonzaga, L.P. (2013) Taxonomy, natural history and conservation of *Paroaria baeri* (Aves: Thraupidae). *Tropical Zoology*, 26, 1–17.
http://dx.doi.org/10.1080/03946975.2013.803820

Lopes, L.E., Malacco, G.B., Vasconcelos, M.F., Carvalho, C.E.A., Duca, C., Fernandes, A.M., D'Angelo Neto, S. & Marini, M.Â. (2008a) Aves da região de Unaí e Cabeceira Grande, noroeste de Minas Gerais, Brasil. *Revista Brasileira de Ornitologia*, 16, 193–206.

Lopes, L.E., Maldonado-Coelho, M., Hoffmann, D., Luiz, E.R. & D'Angelo Neto, S. (2008b) Geographic distribution, habitat association, and conservation status of the Critically Endangered Minas Gerais Tyrannulet *Phylloscartes roquettei*. *Bird Conservation International*, 18, 53–62.
http://dx.doi.org/10.1017/S0959270908000014

Lopes, L.E., Pinho, J.B., Bernardon, B., Oliveira, F.F., Bernardon, G., Ferreira, L.P., Vasconcelos, M.F., Maldonado-Coelho, M., Nóbrega, P.F.A. & Rubio, T.C. (2009) Aves da Chapada dos Guimarães, Mato Grosso, Brasil: uma síntese histórica do conhecimento. *Papéis Avulsos de Zoologia*, 49, 9–47.

Marini, M.Â. (2001) Effects of forest fragmentation on birds of the Cerrado region, Brazil. *Bird Conservation International*, 11, 13–25.
http://dx.doi.org/10.1017/S0959270901001034

Marini, M.Â., Barbet-Massin, M., Lopes, L.E. & Jiguet, F. (2009a) Major current and future gaps of Brazilian reserves to protect Neotropical savanna birds. *Biological Conservation*, 142, 3039–3050.
http://dx.doi.org/10.1016/j.biocon.2009.08.002

Marini, M.Â., Barbet-Massin, M., Lopes, L.E. & Jiguet, F. (2009b) Predicted climate-driven bird distribution changes and forecasted conservation conflicts in a neotropical savanna. *Conservation Biology*, 23, 1558–1567.
http://dx.doi.org/10.1111/j.1523-1739.2009.01258.x

Mattos, G.T., Andrade, M.A. & Freitas, M.V. (1991) Levantamento de aves silvestres na região noroeste de Minas Gerais. *Revista da Sociedade Ornitológica Mineira*, 39, 26–29.

Meyer de Schauensee, R. (1966) *The species of birds of South America with their distribution*. Academy of Natural Sciences of Philadelphia, Narberth, USA, xvii + 577 pp.

Motta-Junior, J.C. (1991) *A exploração de frutos como alimento por aves de mata ciliar numa região do Distrito Federal*. M.Sc. Dissertation. Universidade Estadual Paulista, Rio Claro, Brazil, 121 pp.

Munsell (2000) *Munsell soil color charts*. Gretag Macbeth, New York, USA, 9 pp.

Novaes, F.C. (1953) Sôbre a validade de *Syndactyla mirandae* (Snethlage, 1928) (Furnariidae, Aves). *Revista Brasileira de Biologia*, 14, 75–76.

Ohlson, J.I., Irestedt, M., Ericson, P.G.P. & Fjeldså, J. (2013) Phylogeny and classification of the New World Suboscines (Aves, Passeriformes). *Zootaxa*, 3613, 1–35.
http://dx.doi.org/10.11646/zootaxa.3613.1.1

Pacheco, J.F. (1995) Notulae et corrigienda. *Atualidades Ornitológicas*, 66, 10.

Paynter, R.A. Jr. (1989) *Ornithological gazetteer of Paraguay, 2nd ed.* Museum of Comparative Zoology, Cambridge, USA, iv + 59 pp.

Paynter, R.A. Jr. & Traylor, M.A. Jr. (1991) *Ornithological gazetteer of Brazil. 2 Vols.* Museum of Comparative Zoology, Cambridge, USA, vii + 788 pp.

Pelzeln, A., von. (1859) Über neue Arten der Gattungen *Synallaxis, Anabates* und *Xenops* in der kaiserlichen ornithologischen Sammlung, nebst Auszügen aus Johann Natterer's nachgelassenen Notizen über die von ihm in Brasilien gesammelten Arten der Subfamilien: Furnarinae und Synallaxinae. *Sitzungsberichte der Mathematisch-Naturwissenschaftlichen Classe der Kaiserlichen Akademie der Wissenschaften*, 34, 99–134.

Pelzeln, A. von. (1868–1870) *Zur ornithologie Braziliens: resultate von Johann Natterers reisen in den Jahren 1817 bis 1835, parts I-IV.* Pichler's Withwe & Sohn, Vienna, Austria, LIX + 462 + 17 pp.

Peters, J.L. (1951) *Check-list of birds of the World. Vol. 7*. Museum of Comparative Zoology, Cambridge, USA, x + 318 pp.

Pinto, O.M.O. (1932) Resultados ornitológicos de uma excursão pelo oeste de São Paulo e sul de Mato Grosso. *Revista do Museu Paulista*, 17, 689–826.

Pinto, O.M.O. (1938) Catálogo das aves do Brasil e lista dos exemplares que as representam no Museu Paulista. 1ª parte: Aves não Passeriformes e Passeriformes não Oscines excluída a fam. Tyrannidae e seguintes. *Revista do Museu Paulista*, 22, i–xviii + 1–566.

Pinto, O.M.O. (1940) Nova contribuição à ornitologia de Mato-Grosso. *Arquivos de Zoologia*, 1, 1–37.

Pinto, O.M.O. (1945) Cinqüenta anos de investigação ornitológica. *Arquivos de Zoologia*, 4, 261–340.

Pinto, O.M.O. (1978) *Novo catálogo das aves do Brasil, primeira parte—Aves não Passeriformes e Passeriformes não Oscines, com exclusão da família Tyrannidae*. Empresa Gráfica da Revista dos Tribunais, São Paulo, Brazil, 446 pp.

Pinto, O.M.O. & Camargo, E.A. (1955) Lista anotada de aves colecionadas nos limites ocidentais do estado do Paraná. *Papéis Avulsos do Departamento de Zoologia*, 12, 215–234.

Poche, F. (1910) Ergänzungen und Berichtigungen zu R. B. Sharpes "Hand-list of the genera and species of birds". *Journal für Ornithologie*, 58, 718–730.
http://dx.doi.org/10.1007/BF02090345

Remsen, J.V. Jr. (2003) Family Furnariidae (Ovenbirds). *In:* Del Hoyo, J., Elliott, A. & Sargatal, J. (Eds), *Handbook of the birds of the World. Vol. 8. Broadbills to Tapaculos*. Lynx Edicions, Barcelona, Spain, pp. 162–357.

Ribeiro, G.H.P.M. & Felfili, J.M. (2009) Regeneração natural em diferentes ambientes da mata de galeria do Capetinga, na Fazenda Água Limpa-DF. *Cerne*, 15, 1–9.

Ribon, R., Estevão, G.R.M., Simon, J.E., Silva, N.F., Pacheco, S. & Pinheiro, R.T. (1995) Aves do cerrado de Três Marias, estado de Minas Gerais. *Revista Ceres*, 42, 344–352.

Ridgely, R.S. & Tudor, G. (1994) *The birds of South America. Vol. 2. the suboscine passerines*. University of Texas Press, Austin, USA, 814 pp.

Robbins, M.B., Faucett, R.C. & Rice, N.H. (1999) Avifauna of a Paraguayan Cerrado locality: Parque Nacional Serranía San Luis, Depto. Concepción. *The Wilson Bulletin*, 11, 216–228.

Robbins, M.B. & Zimmer, K.J. (2005) Taxonomy, vocalizations and natural history of *Philydor dimidiatum* (Furnariidae), with comments on the systematics of *Syndactyla* and *Simoxenops*. *Bulletin of the British Ornithologist's Club*, 125, 212–228.

Sano, E.E., Rosa, R., Brito, J.L.S. & Ferreira, L.G. (2010) Land cover mapping of the tropical savanna region in Brazil *Environmental Monitoring and Assessment*, 166, 113–124.
http://dx.doi.org/10.1007/s10661-009-0988-4

Scherer-Neto, P. & Straube, F.C. (1995) *Aves do Paraná: história, lista anotada e bibliografia*. Edited by the authors, Curitiba, Brazil, 79 pp.

Sclater, P.L. (1890) *Catalogue of the Passeriformes, or perching birds, in the collection of the British Museum, Tracheophone. Vol. XV.* British Museum, London, UK, 371 pp.

Seabra, H.F., Encinas, J.I. & Felfili, J.M. (1991) Análise estrutural da mata ciliar do córrego Capetinga—DF, hábitat de *Callithrix jacchus penicillata* L. *Pesquisa Agropecuária Brasileira*, 26, 11–17.

Sick, H. (1997) *Ornitologia Brasileira*. Nova Fronteira, Rio de Janeiro, Brazil, 862 pp.

Silva, J.M.C. & Bates, J.M. (2002) Biogeographic patterns and conservation in the South American Cerrado: a tropical savanna Hotspot. *BioScience*, 52, 225–233.
http://dx.doi.org/10.1641/0006-3568(2002)052[0225:BPACIT]2.0.CO;2

Silva, J.M.C. & Oniki, Y. (1988) Lista preliminar da avifauna da Estação Ecológica Serra das Araras, Mato Grosso, Brasil. *Boletim do Museu Paraense Emílio Goeldi, Série Zoologia*, 4, 123–143.

Silveira, L.F. (1998) The birds of Serra da Canastra National Park and adjacent areas, Minas Gerais, Brazil. *Cotinga*, 10, 55–63.

Snethlage, E. (1928a) Novas espécies e subespécies de aves do Brasil central. *Boletim do Museu Nacional*, 4, 1–7.

Snethlage, E. (1928b) Neue Vogelarten und Unterarten aus Innerbrasilien. *Journal für Ornithologie*, 76, 581–587.
http://dx.doi.org/10.1007/BF02029012

Souza, D.G.S. (1999) Novos registros de espécies de aves no estado da Bahia e sua correlação com os ecossistemas. *Atualidades Ornitológicas*, 88, 6–7.

Souza, L.G. & Santos, R.V. (2001) Perfil demográfico da população indígena Xavánte de Sangradouro-Volta Grande, Mato Grosso (1993-1997), Brasil. *Cadernos de Saúde Pública*, 17, 355–365.
http://dx.doi.org/10.1590/S0102-311X2001000200010

StatSoft (2007) Statistica, version 8.0 (Computer program). Statsoft, Inc., Tulsa, USA

Straube, F.C. & Bornschein, M.R. (1995) New and noteworthy records of birds from northwestern Paraná and adjacent areas (Brazil). *Bulletin of the British Ornithologist's Club*, 115, 219–225.

Straube, F.C., Urben-Filho, A. & Kajiwara, D. (2004) Aves. *In:* Mikich, S.B. & Bérnils, R.S. (Eds.), *Livro vermelho da fauna ameaçada no estado do Paraná*. Instituto Ambiental do Paraná, Curitiba, Brazil, pp. 143–496.

Tabachnick, B.G. & Fidell, L.S. (2007) *Using multivariate statistics, 5th ed.* Pearson, Boston, USA, xxviii + 980 pp.

Tubelis, D.P. & Tomas, W.M. (2003) Bird species of the Pantanal wetland, Brazil. *Ararajuba*, 11, 5–37.

Vallejos, M.A.V. & Morimoto, D. (2012) The importance of data verification: unchecked errors in basic natural history sampling may greatly impair conservation research. *Biological Conservation*, 157, 437–438.
http://dx.doi.org/10.1016/j.biocon.2012.07.024

Vanzolini, P.E. (1993) As viagens de Johann Natterer no Brasil, 1817-1835. *Papéis Avulsos de Zoologia*, 38, 17–60.

Vasconcelos, M.F., D'Angelo Neto, S., Kirwan, G.M., Bornschein, M.R., Diniz, M.G. & Silva, J.F. (2006) Important ornithological records from Minas Gerais state, Brazil. *Bulletin of the British Ornithologist's Club*, 126, 212–238.

Vasconcelos, M.F., Souza, L.N., Duca, C., Pacheco, J.F., Parrini, R., Serpa, G.A., Albano, C., Abreu, C.R.M., Santos, S.S. & Fonseca Neto, F.P. (2012) The avifauna of Brejinho das Ametistas, Bahia, Brazil: birds in a caatinga-cerrado transitional zone, with comments on taxonomy and biogeography. *Revista Brasileira de Biologia*, 20, 246–267.

Vaurie, C. (1980) Taxonomy and geographical distribution of the Furnariidae (Aves, Passeriformes). *Bulletin of the American Museum of Natural History*, 166, 1–357.

APPENDIX 1. Localities, geographical coordinates and references for records of *Syndactyla dimidiata*. Bold font indicates specimens examined personally by LEL, while italics indicate specimens examined through digital photographs. Localities are arranged from north to south.

Locality	Latitude	Longitude	Elevation (m)	Collection number*	Source
Unspecified locality [= Distrito Federal, Brazil?]				**COMB 1771 unsexed**	
Correntina, Bahia, Brazil	13°45'S	45°36'W	710	sight record	Souza 1999
Veadeiro, Goiás, Brazil [= Alto Paraíso de Goiás]	14°07'S	47°31'W	1250	**FMNH 75118 ♂, 75119 ♂**	Laubmann 1940
Rio São Miguel, Goiás, Brazil	14°11'S	47°48'W	865	**FMNH 75120 ♂**	Laubmann 1940
Brejinho das Ametistas, Caetité, Bahia, Brazil	14°20'S	42°32'W	970	**DZUFMG 6152 ♂, 6153 ♂**	Vasconcelos *et al.* 2012
São João da Aliança, Goiás, Brazil	14°42'S	47°32'W	1020	*LACM 39956 ♂, 39957 ♂*	Robbins & Zimmer 2005
Rio Manso, Mato Grosso, Brazil	15°31'S	55°14'W	680	**NMW 19553 ♂**	Pelzeln 1868-1870
Estação Ecológica de Águas Emendadas, Planaltina, Distrito Federal, Brazil	15°32'S	47°37'W	1000	sight record	Bagno 1998
Planaltina, Distrito Federal, Brazil	15°37'S	47°40'W	950	**MNRJ 15607 ♂, 15610 ♂**	Snethlage 1928a
Estação Ecológica Serra das Araras, Mato Grosso, Brazil	15°39'S	57°13'W	200	sight record	Silva & Oniki 1988
Sangrador, Mato Grosso, Brazil	15°39'S	53°54'W	560	**NMW 16359 ♀, 16360 ♂**	Pelzeln 1868-1870
Parque Nacional de Brasília, Brasília, Distrito Federal, Brazil	15°43'S	47°57'W	1040	**RECOR 285 unsexed**	Ridgely & Tudor 1994
Fazenda Mocambinho, Brasília, Distrito Federal, Brazil	15°49'S	47°46'W	1010	**COMB 1126 ♂**	
Fazenda São Miguel, Unaí, Minas Gerais, Brazil	15°50'S	46°30'W	900	sight record	FUNATURA 1994
Reserva Ecológica do IBGE, Brasília, Distrito Federal, Brazil	15°56'S	47°53'W	1100	**BMNH 1984.1.6 ♀, MNRJ 33235 ♂**	Robbins & Zimmer 2005
Córrego Capetinga, Fazenda Água Limpa, Brasília, Distrito Federal, Brazil	15°57'S	47°56'W	1060	**DZUFMG 6165 ♀, MPEG 42236 ♀**	Motta-Junior 1991
Between Cáceres, Concepción, Rio Paraguay, Mato Grosso, Brazil	ca. 15°41'S	57°30'W	130	USNM 346001 ♀ (skeleton)	
Cabeceiras do Ribeirão Cambaúbas, Unaí, Minas Gerais, Brazil	16°13'S	47°06'S	750	sight record	Lopes *et al.* 2008a
São Romão, Minas Gerais, Brazil	16°22'S	45°04'W	480	sight record	Mattos *et al.* 1991
Chapada do Catuni, Francisco Sá, Minas Gerais, Brazil	16°27'S	43°24'W	1100	sight record	Vasconcelos *et al.* 2006
Santa Marta, Grão Mogol, Minas Gerais, Brazil	16°37'S	43°18'W	850	sight record	Vasconcelos *et al.* 2006
Olho d'Agua, Rio Roncador, Goiás, Brazil	16°55'S	50°47'W	630	**MNRJ 15608 ♂**	Snethlage 1928a
Ipameri, Goiás, Brazil	17°43'S	48°09'W	739	**MNRJ 15606 ♂, 15609 ♂**	Snethlage 1928a
Parque Nacional das Emas, Goiás, Brazil	18°00'S	52°45'W	800	sight record	Pacheco 1995
Mendanha, Diamantina, Minas Gerais, Brazil	18°06'S	43°30'W	800	sight record	Vasconcelos *et al.* 2006

……*continued on the next page*

APPENDIX 1. (Continued)

Locality	**Latitude**	**Longitude**	**Elevation (m)**	**Collection number***	**Source**
Fazenda Pedrões, Três Marias, Minas Gerais, Brazil	18°11'S	45°25'W	770	sight record	Ribon *et al.* 1995
Fazenda Recreio, Coxim, Mato Grosso do Sul, Brazil	18°30'S	54°45'W	245	**MZUSP 17258 ♂?,** MCZ 198507 ♂	Pinto 1940
Patos de Minas, Minas Gerais, Brazil	18°35'S	46°32'W	800	sight record	Robbins *et al.* 1999
Campo Alegre, Minas Gerais, Brazil	18°48'S	43°53'W	1000	**DZUFMG 709 ♀, 708 unsexed**	Robbins & Zimmer 2005
Ribeirão Furnas, Fazenda Monte Carmelo, Estrela do Sul, Minas Gerais, Brazil	18°50'S	47°50'W	980	**DZUFMG 5859 ♂, 5858 ♀**	
Fazenda Experimental do Glória, Uberlândia, Minas Gerais, Brazil	18°52'S	48°13'W	900	sight record	Marini 2001
Granja Marileuza, Uberlândia, Minas Gerais, Brazil	18°52'S	48°15'W	870	sight record	Marini 2001
Água Suja, Bagagem, Minas Gerais, Brazil	18°53'S	47°38'W	926	**ZSM 1911.083 ♂, 1911.1648 ♂**	Hellmayr 1911
Patrocínio, Minas Gerais, Brazil	18°57'S	46°59'W	963	**MNRJ 32273 ♂**	Robbins & Zimmer 2005
Nova Ponte, Minas Gerais, Brazil	19°08'S	47°41'W	800	**DZUFMG 707 ♂**	Robbins & Zimmer 2005
Santana do Paranaíba, Mato Grosso do Sul, Brazil	19°40'S	51°11'W	330	**MZUSP 12748 ♂**	Pinto 1932
Parque Nacional da Serra da Canastra, Minas Gerais, Brazil	20°15'S	46°37'W	1100	sight record	Silveira 1998
San Luis de la Sierra, Apa-Bergland, Concepción, Paraguay	22°25'S	57°27'W	200	**ZSM 1932.815 ♂**	Laubmann 1940
Zanja Morotí, Apa-Bergland, Concepción, Paraguay	22°30'S	57°00'W	305	**ZSM 1932.814 ♂**	Laubmann 1940
Parque Nacional Cerro Corá, Amambay, Paraguay	22°39'S	56°04'W	240	sight record	Hayes 1995
Parque Nacional San Luis, Concepción, Paraguay	22°40'S	57°21'W	175	*KUNHM 88362 ♀, 88363 ♀*, MNHNP not numbered? ♂	Robbins & Zimmer 2005
Porto Camargo, Rio Paraná, Paraná, Brazil	23°21'S	53°43'W	250	**MZUSP 36872 ♂**	Pinto & Camargo 1955
Parque Nacional de Ilha Grande, Paraná, Brazil	23°40'S	54°00'W	225	sight record	Straube *et al.* 2004

***Acronyms: BMNH:** Natural History Museum, Tring, UK; **COMB:** Coleção Ornitológica Marcelo Bagno, Universidade de Brasília, Brasília, Brazil; **DZUFMG:** Coleção Ornitológica do Departamento de Zoologia da Universidade Federal de Minas Gerais, Belo Horizonte, Brazil; **FMNH:** Field Museum of Natural History, Chicago, USA; **KUNHM:** University of Kansas Natural History Museum, Lawrence, USA; **LACM:** Natural History Museum of Los Angeles County, Los Angeles, USA; **MCZ:** Museum of Comparative Zoology, Harvard University, Cambridge, USA; **MNHNP:** Museo Nacional de Historia Natural del Paraguay, San Lorenzo, Paraguay; **MNRJ:** Museu Nacional, Rio de Janeiro, Brazil; **MPEG:** Museu Paraense Emílio Goeldi, Belém, Brazil; **MZUSP:** Museu de Zoologia da Universidade de São Paulo, São Paulo, Brazil; **NMW:** Naturhistorisches Museum, Wien, Austria; **RECOR:** Coleção Ornitológica da Reserva Ecológica do Instituto Brasileiro de Geografia e Estatística, Brasília, Brazil; **USNM:** National Museum of Natural History, Smithsonian Institution, Washington, DC, USA; **ZSM:** Zoologische Staatssammlungen Museum, Munich, Germany.