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WHITTINGHAM, L. A. AND R. J. ROBERTSON. 1994. Food availability, parental care and male mating success in Red-winged Blackbirds (*Agelaius phoeniceus*). *Journal of Animal Ecology* 63:139–150.

YASUKAWA, K., F. LEANZA, AND C. D. KING. 1993. An observational and brood-exchange study of paternal

provisioning in the Red-winged Blackbird, *Agelaius phoeniceus*. *Behavioral Ecology* 4:78–82.

YASUKAWA, K., J. L. McCLURE, R. A. BOLEY, AND J. ZANOCCO. 1990. Provisioning of nestlings by male and female Red-winged Blackbirds, *Agelaius phoeniceus*. *Animal Behaviour* 40:153–166.

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First Egg and Standardized Nest Description of the Southern Bristle-Tyrant (*Phylloscartes eximius*)

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ABSTRACT.—In spite of its relevance, data on nest architecture and egg morphology are lacking for several bird species, especially in the Neotropics. We provide the first egg and standardized nest description of the Southern Bristle-Tyrant (*Phylloscartes eximius*), a species considered in the genus *Pogonotriccus* by some authors. Similarly to two other studies, the nest was a closed/globular/lateral structure built mostly with moss and spider web. The only egg we found was clean white and measured 17.1 mm length x 13.5 mm width. Given the plasticity of nest building and the low sample size, more nests should be described to infer relatedness among *Phylloscartes* and *Pogonotriccus* using nest architecture. Similarly, more eggs of these species should be described. Received 28 April 2016. Accepted 16 September 2016.

Key words: Atlantic Forest, breeding biology, phylogenetic relationship, Pipromorphinae, *Pogonotriccus*, Rhynchoeyclidae, Serra da Cantareira.

Data on nest architecture and egg morphology can be used to infer bird phylogenetic hypotheses and help in planning strategies to increase the reproductive success of endangered species (Sheldon and Winkler 1999, Green 2004). In spite of its paramount importance, such data are lacking for several bird species, especially in the Neotropics (Marini et al. 2010, Crozariol 2016). The Southern Bristle-Tyrant (*Phylloscartes eximius*), an insectivore flycatcher endemic to the Atlantic Forest, is an example of a Neotropical bird with poorly known breeding

biology. This species ranges from southeastern to south Brazil and part of Paraguay and Argentina, and it occurs mostly in mountain regions (Fitzpatrick et al. 2004). The Southern Bristle-Tyrant is apparently suffering a sharp decline, which justifies its “Near Threatened” status at a global level (BirdLife International 2016). Moreover, the species occurs in low densities and prefers microhabitat with particular features – it is mostly found in forests near rivers and streams (Tonetti and Pizo 2016).

Although placed by some authors in the genus *Phylloscartes* (e.g., Remsen et al. 2014), others treat the Southern Bristle-Tyrant as a *Pogonotriccus* (Fitzpatrick et al. 2004, Ridgely and Tudor 2009). *Pogonotriccus* (seven species) can be distinguished from the other 15 *Phylloscartes* species by showing the body posture upright, with the tail vertically positioned with respect to the body axis (horizontally positioned in *Phylloscartes*), and by different foraging behavior, remaining perched for longer periods of time before performing short flights to sally for insects (Fitzpatrick et al. 2004, Ridgely and Tudor 2009). Nevertheless, molecular and morphological data suggest similarities between the two genera with no justification to treat them separately (Traylor 1977; Ohlson et al. 2008, 2013; Tello et al. 2009). We provide the first standardized description of a nest of Southern Bristle-Tyrants and the first egg description.

METHODS

We conducted the study at Cantareira State Park (23° 23' S, 46° 34' W), an Atlantic Forest reserve

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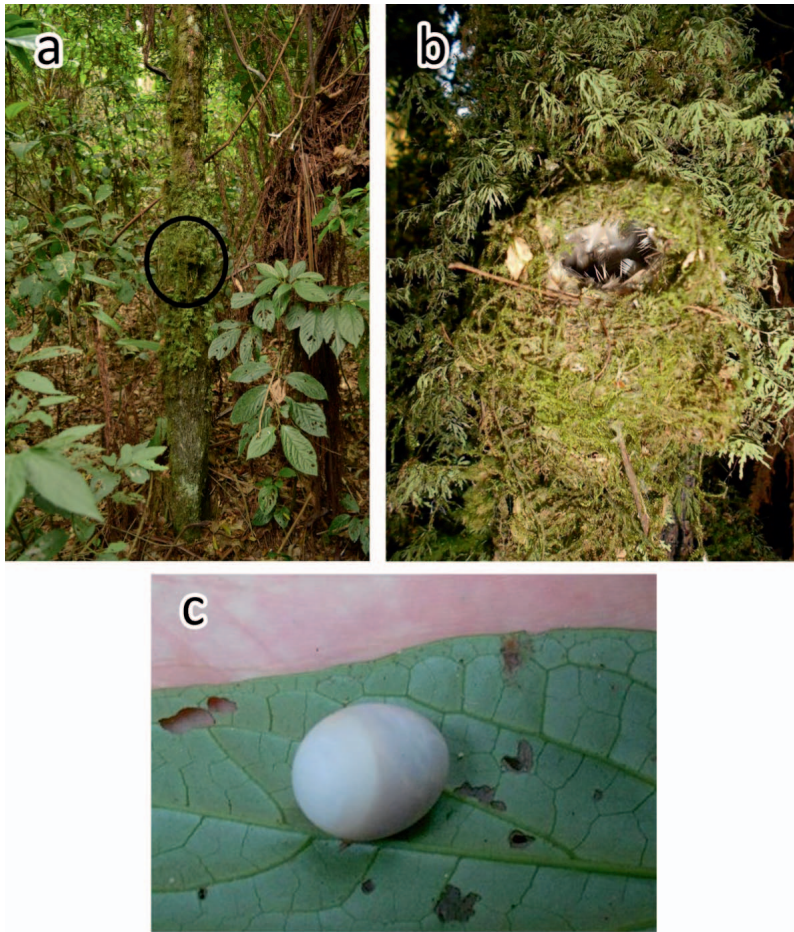


FIG. 1. Nest of the Southern Bristle-Tyrant found in the stem of a tree-fern in the Cantareira State Park (a and b) and the egg (c) found inside it.

located in the metropolitan area of São Paulo, southeast Brazil. The Park is located in Serra da Cantareira (SC), the largest native urban rainforest in the world (Ayres 2008). With 7,900 ha, SC altitude ranges from 775–1,250 m a.s.l., and the predominant vegetation is dense mountain rain forest. Climate is mesothermal and humid with rainy summers and dry winters (CWA Köppen), average temperature of 20°C and 1,300 mm of annual rainfall (Fundação Florestal 2009). Despite the proximity to one of the most densely populated areas in the planet, SC avifauna is rich (326 species), harboring seven globally threatened birds and 80 endemics to the Atlantic Forest, which renders to SC the status of an Important Bird Area

(IBA SP03; Bencke et al. 2006; VRT et al., unpubl. data).

On 6 July 2014 in the “Cabuçu” area of the Cantareira State Park, we found a closed nest located 1.3 m above the ground (Fig. 1a). There were two individuals of the Southern Bristle-Tyrant close to the nest, and one of them entered it through a lateral entrance (Fig. 1b) carrying moss in the bill. The nest was empty and apparently finished. We measured its height, width, and length with the aid of a ruler and described it according to Simon and Pacheco (2005). We also measured the height above ground with a measuring tape and took notes on the surrounding habitat and microhabitat characteristics. On 26 August 2014, we returned to the nest and found a nestling and an

egg. Using a clean spoon, the egg was taken out and measured with a caliper. To avoid further disturbance, we did not touch the nestling.

RESULTS

The nest was attached laterally to the straight stem of a tree-fern *Cyathea* sp. (Cyatheaceae), which was covered by a layer of moss associated with small ferns *Polyphlebium angustatum* (Fig. 1a). The tree-fern was ~7 m high and was under a ~25-m tree. The nest was in an area of mature forest where the canopy reaches ~20 m height. There was no water body (e.g., stream or pond) in the nearby area. The nest was globular and showed a very short lateral entrance “tunnel” on its upper third portion, pointing 90° in relation to the tree-fern stem (Fig. 1b). According to Simon and Pacheco (2005), the nest is closed/globular/lateral and had the following measurements: height from the ground = 1.3 m, nest external height = 15 cm, external width = 12 cm, external depth = 11 cm, distance from the center of the entrance to the lower end of the nest = 9 cm, width of the nest entrance = 4 cm and height of the nest entrance = 3 cm. The nest was constructed with live moss with spider web in the external walls fixing the material, while plumed seeds lined the interior. The egg was clean white and measured 17.1 mm length x 13.5 mm width (Fig. 1c).

Roughly 4 months later on 2 November 2014, VRT returned to the nest area and noticed four Southern Bristle-Tyrants nearby. One of them was distant 15 m from the others and sang. Two of the three other birds (probably juveniles) were calling and being fed by the other, a supposed adult. Based on his experience in detecting the species by its vocalizations, VRT realized that the callings emitted by the two juveniles were different from the calling of adults. VRT could not notice any other difference in plumage coloration or in size between juveniles and adults. The juveniles were fed twice in 20 mins. We suppose that the juveniles he observed came from the nest we observed.

DISCUSSION

The only two other nests described for the Southern Bristle-Tyrant can be considered of the same type we found, closed/globular/lateral, and were built with the same material: moss and spider

web. Lombardi et al. (2010) provided notes on a nest attached to a trunk 8 m above the ground in an Atlantic Forest reserve in eastern Brazil (Quedas do Rio Bonito Ecological Park, Minas Gerais state). The nest found by Lombardi et al. (2010) was not completely built, and authors concluded it was closed/globular/lateral by analyzing it on the last stages of construction. Thus, our study is the first to describe according to the standardization of nest descriptions of Neotropical birds proposed by Simon and Pacheco (2005) a finalized, and with measurements, nest of the Southern Bristle-Tyrant. Contrary to Lombardi et al. (2010), we observed nest building behavior one time only and by just one individual, thus we are not able to assert whether both parents participate in such behavior. Similarly, we observed only one parental care event (the juveniles being fed by the supposed adults). Another description was made by Narosky and Salvador (1998) in the Iguazu National Park (Misiones, Argentina) – a nest of Southern Bristle-Tyrants was found in 21 August attached to a stem of a Juçara palm *Euterpe edulis* (Arecaceae) 1 m above the ground with two nestlings. Despite evidence that the species prefers riparian forests to forage (Tonetti and Pizo 2016), the nest we described was not close to a river or stream.

Although bird reproductive activities usually starts in August and September in our study area (VRT, pers. obs.), we found the nest apparently finished on 7 July. SC region faced a severe drought in the year of our study (Dobrovolski and Rattis 2015), and low levels of precipitation might have influenced the availability of insects, which in turn could have had negative effects on the reproduction of insectivorous birds (Green 2004). Thus, as it is possible that atypical rainfall levels may have some influence on reproduction of Southern Bristle-Tyrants, to confirm the usual breeding period of the species in the region it is necessary to find other nests in years of normal precipitation.

Only one nest was described for other *Pogonotriccus* with secure identification of the species: the Marble-faced Bristle Tyrant (*Pogonotriccus ophthalmicus*). The nest of Marble-faced Bristle Tyrant is quite similar, also being described as closed/globular/lateral, to that of the Southern Bristle-Tyrant (Greeney 2009). In addition, the nest of the type species of the genus *Phylloscartes*,

the Mottle-cheeked Tyrannulet (*Phylloscartes ventralis*), can also be classified as closed/globular/lateral, but different architectures have been reported for the species, such as closed/ovoid/pensile and closed/long/pensile (Klimaitis 1984, Narosky and Salvador 1998, Fitzpatrick et al. 2004, Kindel 2011). The material used by the Mottle-cheeked Tyrannulet also varies: small sticks, dead leaves, moss, lichen, vines, and spider webs. Nests of other *Phylloscartes* vary from closed/globular/lateral to closed/globular/pensile and closed/retort/pensile (see a review in Gussoni 2014).

The genera *Phylloscartes* and *Pogonotriccus* are included in the sub-family Pipromorphinae being closely related to the genera *Corythopis*, *Leptopogon*, *Mionectes* and *Pseudotriccus* (Ohlson et al. 2008, 2013; Tello et al. 2009). Greeney (2009) has claimed that nest architecture can be used to separate *Pogonotriccus* from *Phylloscartes*, thereby supporting the hypothesis of these two as distinct genera. Kirwan et al. (2010) revised the nest architecture of these birds and recognized similarities among them, thus supporting a close relationship. Despite these similarities, given their great plasticity in nest building, a larger number of nests of *Phylloscartes* and *Pogonotriccus* species are needed to better characterize the plasticity of nest architecture of these birds and reliably infer phylogenetic relationships. Only two from seven *Pogonotriccus* species have their nests described so far (three of *P. eximius* and one of *P. ophthalmicus*), while five of the 15 *Phylloscartes* species do not have their nests known (Gussoni 2014).

In relation to egg morphology, the only-known egg of a *Pogonotriccus* (the Marble-faced Bristle Tyrant, *P. ophthalmicus*) has the same color pattern of the Southern Bristle-Tyrant's egg we found, clean white (Greeney 2009), which is also the same egg color of other Pipromorphinae (Narosky and Salvador 1998; Greeney 2006; Kirwan et al. 2010) – except for *Corythopis*. The latter have eggs that are pinkish or buff with a slight mottling of darker buff around the larger end (Oniki and Willis 1980, Simon and Pacheco 1996). The other Rhynchocyclidae placed in other sub-families (Tello et al. 2009), have their egg coloration varying from bright to dark reddish gray ground (*Lophotriccus*), to clean white or white with brown spots in the large end (*Tolmomyias*), white with dots in one end (in

the genera *Hemitriccus*, *Rhynchocyclus* and *Todirostrum*), and cinnamon flecking totally dotted in the *Poecilotriccus* (Traylor 1977, Bencke et al. 2001, Rodríguez-Ferraro and Azpiroz 2006, Ocampo and Londoño 2011, Anciães et al. 2012, Greeney 2014). Thus, based on our results and the available information of the breeding biology of this group of birds, it is not possible to corroborate *Pogonotriccus* as a distinct genus from *Phylloscartes*.

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LITERATURE CITED

- ANCIÃES, M., T. M. AGUILAR, L. O. LEITE, R. D. ANDRADE, AND M. Â. MARINI. 2012. Nesting biology of the Yellow-olive Flatbill (Tyrannidae, Elaninae) in Atlantic Forest fragments in Brazil. *Wilson Journal of Ornithology* 124:547–557.
- AYRES, A. C. M. 2008. O ciclo da Caapora: a RMSP e o Parque Estadual da Cantareira. Annablume, São Paulo, Brazil.
- BENCKE, G. A., C. S. FONTANA, J. K. F. MÄHLER JR., AND C. M. JOENCK. 2001. First description of the nest of the Brown-breasted Pygmy-Tyrant (*Hemitriccus obsoletus*) and additional information on the nesting of the Striolated Tit-Spintail (*Leptasthenura striolata*). *Ornitologia Neotropical* 12:1–9.
- BENCKE, G. A., G. N. MAURÍCIO, P. F. DEVELEY, AND J. M. GOERCK (Organizers). 2006. Áreas importantes para a conservação das aves no Brasil. Parte 1. Estados do domínio da Mata Atlântica. SAVE Brasil, São Paulo, Brazil.
- BIRDLIFE INTERNATIONAL. 2016. Species factsheet: *Phylloscartes eximius*. BirdLife International, Cambridge, United Kingdom. www.birdlife.org (accessed 2 Jan 2016).
- CROZARIOL, M. A. 2016. Espécies de aves com ninhos não descritos ou pouco conhecidos das famílias Tityridae, Platyrinchidae, Pipritidae, Pipromorphidae e Tyrannidae: um pedido de auxílio aos observadores de aves! *Atualidades Ornitológicas* 189:18–24.
- DOBROVOLSKI, R. AND L. RATTIS. 2015. Water collapse in Brazil: the danger of relying on what you neglect. *Natureza e Conservação* 13:80–83.
- FITZPATRICK, J. W., J. M. BATES, K. S. BOSTWICK, I. C. CABALLERO, B. M. CLOCK, A. FARNSWORTH, P. A. HOSNER, L. JOSEPH, G. M. LANGHAM, D. J. LEBBIN, J.

- A. MOBLEY, M. B. ROBBINS, E. SCHOLES, J. G. TELLO, B. A. WALTHER, AND K. J. ZIMMER. 2004. Family Tyrannidae (tyrant-flycatchers). Pages 170–462 in *Handbook of the birds of the world. Volume 9. Cotingas to pipits and wagtails* (J. del Hoyo, A. Elliott, and D. A. Christie, Editors). Lynx Edicions, Barcelona, Spain.
- FUNDAÇÃO FLORESTAL. 2009. Parque Estadual da Cantareira: plano de manejo [in Portuguese]. Fundação Florestal, São Paulo, Brazil.
- GREEN, R. E. 2004. Breeding biology. Pages 57–83 in *Bird ecology and conservation: a handbook of techniques* (W. J. Sutherland, I. Newton, and R. E. Green, Editors). Oxford University Press, Oxford, United Kingdom.
- GREENEY, H. F. 2006. The nest, eggs, and nestlings of the Rufous-headed Pygmy-Tyrant (*Pseudotriccus ruficeps*) in southeastern Ecuador. *Ornitologia Neotropical* 17:589–592.
- GREENEY, H. F. 2009. A nest of the Marble-faced Bristle Tyrant (*Pogonotriccus ophthalmicus*) with comparative comments on nests of related genera. *Wilson Journal of Ornithology* 121:631–634.
- GREENEY, H. F. 2014. The nest and eggs of Rusty-fronted Tody-Flycatcher *Poecilatriccus latirostris*. *Cotinga* 36(Online):59–61.
- GUSSONI, C. O. A. 2014. Área de vida e biologia reprodutiva da Maria-da-restinga (*Phylloscartes kronei*) (Aves, Tyrannidae) [in Portuguese with English abstract]. Dissertation. Universidade Estadual Paulista, Rio Claro, Brazil.
- KINDEL, I. 2011. WA532294, *Phylloscartes ventralis* (Temminck, 1824). WikiAves: a enciclopédia das aves do Brasil, Juiz de Fora, Brazil. www.wikiaves.com/532294 (accessed 10 Feb 2016).
- KIRWAN, G. M., A. BODRATI, AND K. COCKLE. 2010. The nest of the Bay-ringed Tyrannulet (*Phylloscartes sylviolus*), a little-known Atlantic Forest endemic, supports a close relationship between *Phylloscartes* and *Pogonotriccus*. *Ornitologia Neotropical* 21:397–408.
- KLIMAITIS, J. F. 1984. Nota sobre un nido de la Mosqueta vientre amarillo (*Phylloscartes ventralis*) en Punta Lara, Buenos Aires, Argentina [in Spanish with English summary]. *El Hornero* 12:203–204.
- LOMBARDI, V. T., R. G. FAETTI, S. D'ANGELO NETO, M. F. DE VASCONCELOS, AND C. O. A. GUSSONI. 2010. Notas sobre a nidificação de aves brasileiras raras e/ou pouco conhecidas [in Portuguese with English abstract]. *Cotinga* 32:131–136.
- MARINI, M. Â., C. DUCA, AND L. T. MANICA. 2010. Técnicas de pesquisa em biologia reprodutiva de aves. Pages 297–312 in *Ornitologia e conservação: ciência aplicada, técnicas de pesquisa e levantamento* (S. Von Matter, F. C. Straube, I. A. Accordi, V. de Q. Piacentini, and J. F. Cândido-Jr., Editors) [in Portuguese]. Technical Books Editora, Rio de Janeiro, Brazil.
- NAROSKY, T. AND S. SALVADOR. 1998. Nidificación de las aves argentinas: Tyrannidae. Asociación Ornitológica del Plata, Buenos Aires, Argentina.
- O CAMPO, D. AND G. A. LONDOÑO. 2011. Nesting of the Fulvous-breasted Flatbill (*Rhynchocyclus fulvipectus*) in southeastern Perú. *Wilson Journal of Ornithology* 123:618–624.
- OHLSON, J., J. FJELDSÅ, AND P. G. P. ERICSON. 2008. Tyrant flycatchers coming out in the open: phylogeny and ecological radiation of Tyrannidae (Aves, Passeriformes). *Zoologica Scripta* 37:315–335.
- OHLSON, J. I., M. IRESTEDT, P. G. P. ERICSON, AND J. FJELDSÅ. 2013. Phylogeny and classification of the New World suboscines (Aves, Passeriformes). *Zootaxa* 3613:1–35.
- ONIKI, Y. AND E. O. WILLIS. 1980. A nest of the Ringed Gnatpiper (*Corythopsis torquata*). *Wilson Bulletin* 92:126–127.
- REMSEN JR., J. V., J. I. ARETA, C. D. CADENA, S. CLARAMUNT, A. JARAMILLO, J. F. PACHECO, J. PÉREZ-EMÁN, M. B. ROBBINS, F. G. STILES, D. F. STOTZ, AND K. J. ZIMMER. 2016. A classification of the bird species of South America. American Ornithologists' Union. www.museum.lsu.edu/~Remsen/SACCBaseline.htm (accessed 4 Apr 2017).
- RIDGELEY, R. S. AND G. TUDOR. 2009. Field guide to the songbirds of South America: the passerines. University of Texas Press, Austin, USA.
- RODRÍGUEZ-FERRARO, A. AND A. B. AZPIROZ. 2006. Notes on the breeding biology of Maracaibo Tody-Flycatcher *Todirostrum viridanum*. *Cotinga* 25:18–20.
- SHELDON, F. H. AND D. W. WINKLER. 1999. Nest architecture and avian systematics. *Auk* 116:875–877.
- SIMON, J. E. AND S. PACHECO. 1996. Reproduction of *Corythopsis delalandi* (Lesson, 1830) (Aves, Tyrannidae) [in Portuguese with English abstract]. *Revista Brasileira de Biologia* 56:671–676.
- SIMON, J. E. AND S. PACHECO. 2005. On the standardization of nest descriptions of Neotropical birds. *Revista Brasileira de Ornitologia* 13:143–154.
- TELLO, J. G., R. G. MOYLE, D. J. MARCHESE, AND J. CRACRAFT. 2009. Phylogeny and phylogenetic classification of the tyrant flycatchers, cotingas, manakins, and their allies (Aves: Tyrannidae). *Cladistics* 25:429–467.
- TONETTI, V. R. AND M. A. PIZO. 2016. Density and microhabitat preference of the Southern Bristle-Tyrant (*Phylloscartes eximius*): conservation policy implications. *Condor: Ornithological Applications* 118:791–803.
- TRAYLOR JR., M. A. 1977. A classification of the tyrant flycatchers (Tyrannidae). *Bulletin of the Museum of Comparative Zoology* 148:129–184.