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A Nest of the Marble-faced Bristle Tyrant (*Pogonotriccus ophthalmicus*) with Comparative Comments on Nests of Related Genera

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ABSTRACT.—*Pogonotriccus* bristle tyrants are a small group of flycatchers for which few data on nest architecture are available. I describe the nest of Marble-faced Bristle Tyrant (*P. ophthalmicus*) from eastern Ecuador. The nest was an oven-shaped, mossy ball with a hooded side entrance attached by the back to the trunk of a large tree. I discuss aspects of nest architecture, composition, and placement which may prove useful for resolving phylogenetic hypotheses within the *Leptopogon-Pogonotriccus-Pseudotriccus* clade of pipromorphine flycatchers. These characters, in particular nest attachment and construction, support a close relationship between *Pogonotriccus*, *Pseudotriccus*, and *Corythopis*. The switch from draping material to stuffing material during construction may be a key innovation uniting these genera. *Received 12 August 2008. Accepted 30 January 2009.*

The genus *Pogonotriccus* comprises seven species of small flycatchers (Tyrannidae) distributed from northern Venezuela to northern Argentina (Fitzpatrick 2004). Molecular evidence suggests that *Pogonotriccus* forms part of a well defined clade which includes *Corythopis*, *Pseudotriccus*, *Phylloscartes*, *Leptopogon*, and *Mionectes*, and that together this clade is sister to the tody-tyrant-flatbill group (Ohlson et al. 2008, Rheindt et al. 2008). The Marble-faced Bristle Tyrant (*P. ophthalmicus*) ranges from northern Venezuela to northern Bolivia at elevations of 750–2,400 m and includes three currently recognized subspecies (Fitzpatrick 2004). Only two species of *Pogonotriccus* have had nests described, the most recent of which was Variegated Bristle Tyrant (*P. poecilotis*) (Londoño and Muñoz 2006).

Characters derived from nesting behavior have proven to be phylogenetically informative in a variety of avian groups (e.g., Lanyon 1988, Sheldon and Winkler 1999, Zyskowski and Prum 1999, Miller and Greeney 2008). Nest placement, composition, and detailed architecture in particular, are key characters which often remain undescribed or are reported without sufficient detail (Zyskowski and Prum 1999). I describe the first nest of Marble-faced Bristle Tyrant from northeastern Ecuador and compare these findings to related genera.

METHODS

Study Site.—I made all observations on the private reserve of Cabañas San Isidro, adjacent to the Yanayacu Biological Station and Center for Creative Studies. Yanayacu (00° 36′ S, 77° 53′ W) is 5 km west of Cosanga at an elevation of 2,100 m in Napo Province of northeastern Ecuador.

Chronology of Observations.—Oscar Manzaba-B. showed me the nest on 24 September 2007 at which time we observed an adult carrying moss to a partially constructed nest. The nest was checked daily until, on 25 November, I found it had been completely ripped from the tree, and I was unable to locate any portions of the nest on the ground below. Adults frequently vocalized as they approached or exited the nest after feeding. I videotaped the nest on several occasions, capturing these vocalizations on tape. I recorded the distinctive *eskeek e′ ti′ti′ti′ti′ti′* described for this species (e.g., Hilty and Brown 1986) on multiple occasions. These tapes were subsequently examined by Mitch Lysinger who, based on both vocalizations and appearance, concurred with my identification.

RESULTS

General Observations.—Two adults were present in the area during construction, but I was unable to confirm if both participated in construction. The first egg was laid on 11 October, prior to 1030 hrs EST. The second egg was not laid until 13 October, prior to 1115 hrs. Both eggs hatched on 9 November, giving an incubation period of 27 days from clutch completion. I confirmed that two adults participated in nestling provisioning. I last observed nestlings on 23 November, giving a nestling period of at least 16 days, which is likely far short of the true nestling period.

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Nest Architecture.—The nest was a compact mossy ball with a slightly hooded side entrance. It was attached by the back to pre-existing moss and small living vines growing on the side of a smooth, nearly epiphyte-free tree trunk. I found the nest in the later stages of construction and did not observe the manner in which it was attached to the substrate; however, it appeared the birds must have provided an attachment point by stuffing moss into pre-existing gaps in the scarce epiphytic vegetation on the trunk. The nest was 7 m above ground with no obstructions within 5 m of the opening. I was able to see with a mirror that the egg cup, but not the entire chamber, was thickly lined with feathers. I was unable to make any linear measurements of the nest due to its inaccessible position, but I estimate the entrance was 3 cm in diameter with the inner chamber being ca. 4 cm in diameter and 6 cm tall. Externally, I estimate the nest to have been 15 cm tall by 10 cm wide by 10 cm front to back.

Eggs.—Both eggs, through examination with a mirror, appeared similar in shape and color. I removed only one egg from the nest for closer inspection. It was immaculate white and measured 18.1 by 13.4 mm.

DISCUSSION

Londoño and Muñoz (2006) noted there is much confusion over nest architecture in the genus *Pogonotriccus*. Fitzpatrick (2004: 304) described the nest of the Southern Bristle Tyrant (*P. eximus*) as a ''bulky, oven-shaped [nest] with a side entrance, constructed mainly from mosses,'' but provided no details on nest location or means of attachment. Bertoni (1901) described a nest of Southern Bristle Tyrant from Paraguay as attached to a tree trunk, apparently in the same manner as the nest of Marble-faced Bristle Tyrant described in this paper. Hilty and Brown (1986) describe a nest of Marble-faced Bristle Tyrant as a mossy cup 18 m up on a small forked branch. The nest I describe in this paper is dissimilar to this description, but I agree with previous assertions this was likely a nest found early in construction or that the species was misidentified (Londoño and Muñoz 2006). A nest of Marble-faced Bristle Tyrant collected in Peru by Thomas S. Schulenberg, and deposited in the Western Foundation of Vertebrate Zoology collection (collection number TSS # 4406) agrees with the description of the nest I present here. In particular, nest placement, attached by the back to the side of a large tree, appears identical (T. S. Schulenberg, pers. comm.). The only closely examined, published nest description for this genus is that of Variegated Bristle Tyrant, recently described from Colombia (Londoño and Muñoz 2006). This nest was described and pictured as being extremely similar to nests described for the closely related genus, *Leptopogon* (Dobbs and Greeney 2006).

While it is possible that *P. poecilotis* and *P. ophthalmicus* show this extent of divergence in nest architecture, I believe one of two explanations may account for this discrepancy. *Pogonotriccus poecilotis* may be more appropriately considered a member of *Leptopogon* or the occupants (builders) of Londoño and Muñoz's (2006) nest were incorrectly identified. Given that similarly plumaged *Leptopogon superciliaris* also occurs at their study site, and the extreme similarities shown with *Leptopogon* nests, I suggest it is likely this nest was assigned to the wrong species.

It appears certain that *Pogonotriccus* spp., regardless of prior confusion, build enclosed nests with side entrances similar to those described for related genera (i.e., *Leptopogon*, *Mionectes*, *Phylloscartes*) (Ohlson et al. 2008, Rheindt et al. 2008). Nests described for three of the four *Leptopogon* species are remarkably similar in materials used (dry rootlets, moss, seed down, spider egg sacs), location (low under logs or overhanging banks), and attachment (thin vines or rootlets) (Belcher and Smooker 1937, Moore 1944, Skutch 1967, ffrench 1991, Aguilar and Marini 1997, Dobbs and Greeney 2006). Nests described for *Mionectes* also are all similar, being pendant, tear-drop shaped nests built externally of green moss (Willis et al. 1978, Snow and Snow 1979, Bencke 1995, Aguilar et al. 2000, Greeney et al. 2006). Nests of *Phylloscartes* (Sick 1993, Remold and Ramos-Neto 1995, Narosky and Salvador 1998, Fitzpatrick 2004, Kirwan et al. 2004) appear to vary in materials used, but are all described as pendant and appear to be most similar to those of *Leptopogon*. Conversely, the other three genera included in the sister clade to the flatbill-tody-tyrant assemblage (*Pogonotriccus*, *Pseudotriccus*, *Corythopis*) (Ohlson et al. 2008) all appear to build non-pendant nests, either on the ground (i.e., *Corythopis*; Oniki and Willis 1980, Simon and Pacheco 1996), or attached by the back (i.e., *Pseudotriccus*; Greeney et al. 2005a, Greeney 2006; and *Pogonotriccus*; this study).

Recent molecular data suggest that *Phyllos-*

cartes and *Pogonotriccus* are closely related and form a sister clade to *Mionectes* and *Leptopogon* (Ohlson et al. 2008). These four genera form a sister clade to a molecularly and morphologically well supported clade consisting of *Pseudotriccus* and *Corythopis* (Lanyon 1988, Tello and Bates 2007, Ohlson et al. 2008, Rheindt et al. 2008). Differences in nest placement have previously been used to contest the relationship between these two genera (Greeney et al. 2005a, Greeney 2006) but, based on characters examined below, this casting of doubt may have been premature. Considering the nest description of Marble-faced Bristle Tyrant presented here, nests described for related genera, and the recently hypothesized sister relationship pairs within this clade of pipromorphines (Ohlson et al. 2008), I used nest attachment and structural components to evaluate the value of nest architecture in resolving phylogenetic relationships within this group.

Nest architecture, based on nest attachment (immobile or pendant), supports a close relationship between *Corythopis*, *Pseudotriccus*, and *Pogonotriccus* with pendant nests uniting *Phylloscartes*, *Leptopogon*, and *Mionectes*. The majority of species in the ''tody-tyrants, flatbills, and allies'' clade (Ohlson et al. 2008) build pendant nests (i.e., *Poecilotriccus*: Cherrie 1916, Skutch 1960, Greeney et al. 2005; *Todirostrum*: Todd and Carriker 1922, Skutch 1960, Haverschmidt 1968; *Rhynchocyclus*: Skutch 1960, Greeney et al. 2004; *Lophotriccus*: Skutch 1967, Haverschmidt 1968, Hilty and Brown 1986). This suggests that non-pendant nest construction may be a synapomorphy uniting *Corythopis*, *Pseudotriccus*, and *Pogonotriccus*.

The use of predominantly dead or dry material unites *Corythopis* (leaves) and *Leptopogon* (seed down, dry moss) if one considers the general types of materials which constitute the outer portions of nests. The use of predominantly green moss on the outside of nests would suggest closer relationships between *Pseudotriccus*, *Mionectes*, and *Pogonotriccus*. *Phylloscartes* appears variable in its use of nest materials, representing a continuum between these two material types.

The details of the ontogenetic steps and behaviors associated with nest construction are not well known for this group, but the limited information available suggests a third hypothesis, one which closely matches that proposed by Ohlson et al. (2008). Both *Mionectes* and *Leptopogon* begin construction by draping material over an attachment point, subsequently building a ball within the resulting curtain of material (pers. obs.). Similar to the recently described behavior of two furnariids (*Hellmayrea gularis*; Greeney and Zyskowski 2008, and *Premnoplex brunnescens*; Greeney 2008), *Pseudotriccus* likely begins construction by stuffing moss into existing gaps in the vegetation at the attachment point, effectively creating a nest which is part of the substrate (Greeney 2006, pers. obs.). The steps involved in nest construction are not well known for *Corythopis*, *Phylloscartes*, and *Pogonotriccus*. My observations of *P. ophthalmicus* (this study), however, suggest that it too may be a ''stuffer.'' *Corythopis*, with a domed nest on the ground, is also more likely to use methods resembling stuffing rather than draping. *Phylloscartes* is more difficult to classify, but I suggest it is a draper based on sparse descriptions from the literature. Thus, using the behavioral innovations of stuffing and draping, nest architecture within this group supports closer relationships between *Corythopis*, *Pseudotriccus*, and *Pogonotriccus* with draping behavior uniting *Leptopogon*, *Mionectes*, and *Phylloscartes*.

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LITERATURE CITED

AGUILAR, T. M. AND M. Â. MARINI. 1997. Biologia da nidificação de *Leptopogon amaurocephalus* (Tyrannidae). Page 157 *in* Resumos do VI Congresso Brasileiro de Ornitologia (M. Â. Marini, Editor). Sociedade Brasiliera de Ornitologia, Belo Horizonte, Brazil.

AGUILAR, T. M., M. MALDONADO-COELHO, AND M. Â. MARINI. 2000. Nesting biology of the Gray-hooded Flycatcher (*Mionectes rufiventris*). Ornitología Neotropical 11:223–230.

BELCHER, C. AND G. D. SMOOKER. 1937. Birds of the colony of Trinidad and Tobago. Part V. Ibis Series 14, 1:225–249.

BENCKE, G. A. 1995. The nest of the Grey-headed Flycatcher *Mionectes rufiventris*. Bulletin of the British Ornithologists' Club 115:105–108.

BERTONI, A. DE W. 1901. Aves nuevas del Paraguay: catálogo de las aves del Paraguay. Anales Cientificos Paraguayos numero 1.

CHERRIE, G. K. 1916. A contribution to the ornithology of the Orinoco region. Brooklyn Institute of Arts and Sciences Museum Bulletin 2:133–374.

DOBBS, R. C. AND H. F. GREENEY. 2006. Nesting and foraging ecology of the Rufous-breasted Flycatcher (*Leptopogon rufipectus*). Ornitología Neotropical 17:173–181.

FFRENCH, R. 1991. A guide to the birds of Trinidad and Tobago. Second Edition. Cornell University Press, Ithaca, New York, USA.

FITZPATRICK, J. W. 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.

GREENEY, H. F. 2006. The nest, eggs, and nestlings of the Rufous-headed Pygmy-Tyrant (*Pseudotriccus ruficeps*) in southeastern Ecuador. Ornitología Neotropical 17:589–592.

GREENEY, H. F. 2008. Nest construction behavior and variability in nest architecture and nest placement of the Spotted Barbtail (*Premnoplex brunnescens*). Boletín de la Sociedad Antioqueña de Ornitología 18:26–37.

GREENEY, H. F. AND K. ZYSKOWSKI. 2008. A novel nest architecture within the Furnariidae: first nests of the White-browed Spinetail. Condor 110:584–588.

GREENEY, H. F., R. C. DOBBS, AND R. A. GELIS. 2005a. The nest, eggs, nestlings, and parental care of the Bronze-olive Pygmy Tyrant (*Pseudotriccus pelzelni*). Ornitología Neotropical 16:511–518.

GREENEY, H. F., C. DINGLE, R. C. DOBBS, AND P. R. MARTIN. 2006. Natural history of the Streak-necked Flycatcher *Mionectes striaticollis* in north-east Ecuador. Cotinga 25:59–64.

GREENEY, H. F., N. KRABBE, M. LYSINGER, AND W. C. FUNK. 2004. Observations on the breeding and vocalizations of the Fulvous-breasted Flatbill (*Rhynchocyclus fulvipectus*) in eastern Ecuador. Ornitología Neotropical 15:365–370.

GREENEY, H. F., R. C. DOBBS, P. R. MARTIN, K. HAUPKLA, AND R. A. GELIS. 2005b. Nesting and foraging ecology of the Rufous-crowned Tody-Flycatcher (*Poecilotriccus ruficeps*) in eastern Ecuador. Ornitología Neotropical 16:427–432.

HAVERSCHMIDT, F. 1968. Birds of Suriname. Oliver and Boyd, Edinburgh and London, United Kingdom.

HILTY, S. L. AND W. L. BROWN. 1986. A guide to the birds of Colombia. Princeton University Press, Princeton, New Jersey, USA.

KIRWAN, G. M., J. M. BARNETT, M. FERREIRA DE VASCONCELOS, M. A. RAPOSO, S. D. NETO, AND I. ROESLER. 2004. Further comments on the avifauna of the middle São Francisco Valley, Minas Gerais, Brazil. Bulletin of the British Ornithologists' Club 124:207–220.

LANYON, W. E. 1988. A phylogeny of the flatbill and tody-tyrant assemblage of tyrant flycatchers. American Museum Novitates 2923:1–41.

LONDOÑO, G. AND M. C. MUÑOZ. 2006. Primera descripción del nido del atrapamoscas variegado (Tyrannidae: *Pogonotriccus poecilotis*). Ornitología Colombiana 4: 66–69.

MILLER, E. T. AND H. F. GREENEY. 2008. Clarifying the nest architecture of the *Silvicultrix* clade of *Ochthoeca* chat-tyrants (Tyrannidae). Ornitología Neotropical 19:361–370.

MOORE, R. T. 1944. Nesting of the Brown-capped Leptopogon in Mexico. Condor 46:6–8.

NAROSKY, S. AND S. A. SALVADOR. 1998. Nidificación de las aves argentinas: Tyrannidae. Asociación Ornitológica de la Plata, Buenos Aires, Argentina.

ONIKI, Y. AND E. O. WILLIS. 1980. A nest of the Ringed Antpipit (*Corythopis torquata*). Wilson Bulletin 92:126–127.

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.

REMOLD, H. G. AND M. B. RAMOS-NETO. 1995. A nest of the Restinga Tyrannulet *Phylloscartes kronei*. Bulletin of the British Ornithologists' Club 115:239–240.

RHEINDT, F. E., J. A. NORMAN, AND L. CHRISTIDIS. 2008. Phylogenetic relationships of tyrant-flycatchers (Aves: Tyrannidae), with an emphasis on the elaeniine assemblage. Molecular Phylogenetics and Evolution 46:88–101.

SHELDON, F. H. AND D. W. WINKLER. 1999. Nest architecture and avian systematics. Auk 116:875–877.

SICK, H. 1993. Birds in Brazil: a natural history. Princeton University Press, Princeton, New Jersey, USA.

SIMON, J. E. AND S. PACHECO. 1996. Reprodução de *Corythopis delalandi* (Lesson, 1830) (Aves, Tyrannidae). Revista Brasilera de Biología 56:671–676.

SKUTCH, A. F. 1960. The life histories of Central American birds. II. Pacific Coast Avifauna 34. Cooper Ornithological Society, Berkeley, California, USA.

SKUTCH, A. F. 1967. Life histories of Central American highland birds. Publications of the Nuttall Ornithological Club Number 7. Cambridge, Massachusetts, USA.

SNOW, B. K. AND D. W. SNOW. 1979. The Ochre-bellied Flycatcher and the evolution of lek behavior. Condor 81:286–292.

TELLO, J. G. AND J. M. BATES. 2007. Molecular phylogenetics of the tody-tyrant and flatbill assemblage of tyrant flycatchers (Aves: Tyrannidae). Auk 124:134–154.

TODD, W. E. C. AND M. A. CARRIKER JR. 1922. The birds of the Santa Marta region of Colombia: a study in altitudinal distribution. Annals of the Carnegie Museum 14.

WILLIS, E. O., D. WECHSLER, AND Y. ONIKI. 1978. On behavior and nesting of McConnell's Flycatcher (*Pipromorpha macconnelli*): does female rejection lead to male promiscuity? Auk 95:1–8.

ZYSKOWSKI, K. AND R. O. PRUM. 1999. Phylogenetic analysis of the nest architecture of neotropical ovenbirds (Furnariidae). Auk 116:891–911.