



SHORT NOTE

NOTES ON THE NESTING BEHAVIOR OF THE GRAY-MANTLED WREN (*ODONTORCHILUS BRANICKII*)**Oscar Johnson**

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Abstract · The Gray-mantled Wren (*Odontorchilus branickii*) is a poorly-known inhabitant of the canopy of mid-elevation Andean forest, and is a difficult species to study because it occurs at low densities. Almost no natural history information is known for the species, including its nest. In September and October 2016, I observed a pair of wrens actively building a nest in the sub-canopy of upper montane rain forest in the Cordillera Azul of northeastern Peru at an elevation of 1230 m a.s.l.. The nest of *O. branickii* consisted of a cavity-like structure formed by a dried and curled palm frond, into which the wrens were carrying nest material. I also compare the nest of *O. branickii* to that of the Tooth-billed Wren (*O. cinereus*) and to other genera of cavity-nesting wrens. The nests of *O. branickii* and *O. cinereus* are similar, and share characteristics with the nests of *Salpinctes*, *Catherpes*, *Hylorchilus*, and *Microcerculus*, providing taxonomic support for a relationship between these genera.

Resumen · Notas sobre el comportamiento de reproducción del Soterrey Dorsigris (*Odontorchilus branickii*)

El Soterrey Dorsigris (*Odontorchilus branickii*) es un ave poco conocida del dosel de bosque andino de altura media que es difícil de estudiar porque se encuentra en bajas densidades. Por lo tanto, casi no existe información sobre la historia natural de esta especie, incluyendo el nido. En septiembre y octubre de 2016 observé una pareja de *O. branickii* construyendo un nido en el sub-dosel de selva alto-montana en la Cordillera Azul del noreste de Perú a una altura de 1230 m s.n.m.. El nido de *O. branickii* consistía de una cavidad formada por una hoja de palmera enrollada, dentro de la cual los individuos depositaban material para la construcción del nido. También comparo el nido de *O. branickii* con el nido del Soterrey Dientepico (*O. cinereus*), y con otros géneros de soterreyes que anidan en cavidades. Los nidos de *O. branickii* y *O. cinereus* son similares y comparten características con los nidos de especies de los géneros *Salpinctes*, *Catherpes*, *Hylorchilus* y *Microcerculus*, lo que sugiere que están relacionados taxonómicamente.

Key words: Gray-mantled Wren · Nesting · *Odontorchilus branickii* · Peru

INTRODUCTION

The Gray-mantled Wren (*Odontorchilus branickii*; Troglodytidae) is an enigmatic wren found in lower montane rain forest on the eastern slope of the Andes from Bolivia to Colombia at 1400–2200 m a.s.l. (*O. b. branickii*), and on the humid western slope in Ecuador and Colombia at 800–1100 m a.s.l. (*O. b. minor*) (Ridgely & Tudor 1989). Although the Gray-mantled Wren has been considered conspecific with the Tooth-billed Wren (*O. cinereus*) (Paynter & Vaurie 1960), most current authors treat them as separate species (Dickinson & Christidis 2014, Schulenberg & Johnson 2015, Remsen et al. 2016).

Both species of *Odontorchilus* wrens forage in the canopy, typically more than 20 m above the forest floor and often in mixed-species flocks of canopy birds (Parker et al. 1980, Schulenberg 2015). This is in contrast to other members of the Troglodytidae, which are generally vocal, territorial, and conspicuous in lower vegetation strata. Because of these behavioral differences, *Odontorchilus* remains among the most poorly known genera of wrens.

METHODS AND RESULTS

On 28 September 2016, while surveying the avifauna of the western Cordillera Azul of northeastern Peru, I discovered a pair of *O. branickii* in the early stages of nest building. Over the course of four days, I watched this pair actively nest building and took notes on their nesting behavior and nest structure. I detected only these

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two individuals of the species during this four-day period. Both members of the pair were in adult plumage of the subspecies *O. b. branickii*, lacking the buffy chest and diffuse auricular markings of a juvenile (Hellmayr 1934), and had barred central retrices typical of this subspecies, the expected subspecies in this geographic area (Ridgely & Tudor 1989).

The site was located in a patchwork of shade coffee plantations and lower montane rain forest (Terborgh 1985) near the summit of a 1230 m elevation north-south oriented ridge, 2 km south of the town of Selva Andina (7°24'54"S, 76°13'52"W) in San Martín Department, Peru. The site was in a small gully with shallow slope in a patch of forest approximately 200 m down a small trail leading off from a single lane dirt road. I estimated the forest in this gully to be approximately 20 m tall, with scattered larger trees, and the area had apparently been selectively logged.

I spent a total of 95 minutes observing the nest over the course of four days from 28 September 2016 to 1 October 2016. I made most observations between 07:00 h and 09:00 h EST, during the peak of overall bird activity. One visit at 17:30 h on 1 October found the nest area quiet, with at least one *O. branickii* actively feeding in a mixed-species canopy flock of flycatchers and tanagers approximately 50 m upslope of the nest site. I observed the birds with a pair of Swarovski 10x42 binoculars, and was also able to obtain photos and video with a Canon Rebel T5i camera with an EF 300mm f/4L IS lens, and sound recordings with a Roland R-26 recorder and Sennheiser ME-67 microphone. Photos, video, and sound recordings are deposited in the Macaulay Library of Natural Sounds (<http://macaulay-library.org/>) (ML523802, ML37440411, ML40177681, ML40177561, ML40177521, ML40177531; Figure 1, Figure 2).

The nest was c. 8 m above ground in a fallen dried pinnate palm frond that had become stuck in a smaller tree that was about 12 m tall. The frond was approximately 3–4 m in length and was positioned more or less horizontally, with the base of the frond oriented upslope. The petiole base had dried and curled into a roughly vertical tube, open at the top and bottom, and it was in the upper opening that the wrens were constructing a nest (ML40177681, Figure 1).

Both members of the pair were actively involved in nest construction, typically following each other closely on forays to gather nesting material. Most forays lasted 1–2 minutes and were restricted to the 5–20 m radius around the nest tree. The pair stayed between 5–12 m above the ground during these forays, making observations easy, even from a stationary observation point. Both individuals stayed in close proximity and gave a constant series of a variety of high-pitched call notes (ML37440411). The majority of forays took place in tangled masses of dead plant material, usually to clusters of dead leaves or branches. The majority of material collected ap-

peared to be thin strips of bark, typically actively removed from a branch by the wren (ML40177521, Figure 2). The birds also collected short twigs, although less frequently.

Upon returning to the nest hole, one member of the pair would enter the nest cavity and spend between a few seconds to one minute out of sight before exiting the nest and allowing the second member of the pair to enter. I observed both members of the pair enter the nest hole simultaneously on only one occasion. It was impossible to observe the structure of the nest from the ground, and the precarious nature of the palm frond would have made any attempt to access the nest result in it falling to the ground.

In other species of wrens, the nests typically contain an outer structure of larger plant fibers and an interior constructed of smaller or finer plant material (Baicich & Harrison 1997, Kroodsmá & Brewer 2005), but I did not observe a noticeable diminishment of the size of the material gathered over four days of observation. Assuming that *O. branickii* follows this pattern, it indicates that the pair was actively constructing the main structure of the nest and was still early in the nest building process.

DISCUSSION

This description represents the first known nesting of *O. branickii* and provides insight into the natural history of this poorly known species. The breeding season of many lowland Amazonian bird species peaks during the end of the dry season and the beginning of the wet season (Johnson et al. 2012). The observations described here, at the onset of the wet season, suggests *O. branickii* follows a similar pattern, although nesting phenology of birds of the tropical foothills of the Andes is poorly known. This nesting behavior is later in the year than that of *O. cinereus*, which has been found nesting from April to September (Stotz et al. 1997, Zimmer et al. 1997, Schulenberg 2015), although it is difficult to be certain of these differences given the limited sample size.

For *Odontorchilus cinereus*, only three nests have been reported. Stotz et al. (1997) observed a pair seen taking twigs to a dead limb 20 m above ground (and saw a pair investigating a possible nest site in a hole in a dead limb 25 m above ground). Zimmer et al. (1997) observed a bird carrying food to a knot hole 17 m high. A pair was found nesting in a hollow metal tube in a canopy tower (Schulenberg 2015). Thus, although its choice of nest substrate appears to be flexible, *O. cinereus* is evidently a cavity-nesting species. In contrast, the nest of *O. branickii* described here was not found in a cavity, although the tubular palm base is similar in structure to a natural cavity or hole. Discovery of additional nests might show that *O. branickii* is also a cavity-nesting species, with similarly flexible choice in nest substrates, as in *O. cinereus*.



Figure 1. One member of a pair of Gray-mantled Wrens (*Odontorchilus branickii*) arriving at the nest opening with material, San Martín, Peru, 28 September 2016 (photo O. Johnson).



Figure 2. A Gray-mantled Wren (*Odontorchilus branickii*) with nest material, San Martín, Peru, 28 September 2016 (photo O. Johnson).

Nest architecture in passerine birds is phylogenetically conserved, particularly with regard to cavity nesting (Collias 1997). The majority of wren species build conspicuous domed or retort-shaped nests, although a few do nest in cavities (Bangs & Peters

1927, Baicich & Harrison 1997, Christian & Roberts 2000, Kroodsma & Brewer 2005, Schulenberg 2015). Two phylogenetic studies of the Troglodytidae have included *O. cinereus* (Barker 2003, Mann et al. 2006), which help place the nesting behavior of *Odontor-*

chilus wrens in an evolutionary perspective. Neither study placed *Odontorchilus* with high support, but the mostly likely placement was sister to a group containing the genera *Catherpes*, *Hylorchilus*, *Microcerculus*, and *Salpinctes*. These four genera are unique amongst wrens in building cup nests in burrows or crevices excavated by other species, or in natural cavities (Bangs & Peters 1927, Baicich & Harrison 1997, Christian & Roberts 2000, Kroodsma & Brewer 2005). Nest structure has been used to reliably infer systematic relationships within bird families (Vaurie 1980, Winkler & Sheldon 1993), and the behavior of building a nest within a cavity supports the placement of *Odontorchilus* within or sister to this group of four genera. Other cavity-nesting wrens, such as *Troglodytes* spp., Bewick's Wren (*Thryomanes bewickii*), and Carolina Wren (*Thryothorus ludovicianus*), build a large dome-shaped nest within a cavity (Kroodsma & Brewer 2005). These latter taxa are either phylogenetically nested within, or sister to, clades of dome-nesting taxa (Barker 2003, Mann et al. 2006), and thus appear to represent reversals to a cavity-nesting habit or evolutionary intermediates between cavity and dome nesting. The alternative placement for *Odontorchilus* is sister to all other wren genera (Mann et al. 2006, Davis & Page 2014), which suggests that cavity nesting is the ancestral state for crown wrens. Greater taxon sampling and broader genomic sampling are necessary to resolve the phylogenetic placement of this genus.

Many wren species exhibit complex breeding behaviors, including polygamy, multiple nests, and cooperative breeding (Kroodsma & Brewer 2005). The nesting behavior described here, with a single pair of birds actively building a single nest, suggests that *O. branickii* is a monogamous species. Although *O. branickii* is somewhat unusual within the Troglodytidae in this regard, *O. cinereus* is likely also monogamous (Stotz et al. 1997, Schulenberg 2015).

The breeding biology of many Neotropical passerines is generally poorly known, particularly for canopy species. The nest described here provides the first description of the breeding biology of *O. branickii*. Additional natural history information will facilitate comparisons of the nest structure, parental care, and clutch size in the Troglodytidae.

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