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Notes on the breeding biology of birds in riverine floodplains of western Amazonia

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SUMMARY.—We present new information on the breeding biology of six bird species from riverine floodplains in Brazilian and Ecuadorian Amazonia, principally from the Madeira River, near Porto Velho, Rondônia, Brazil, but also the Napo River in eastern Ecuador. We describe for the first time the nest of White-bellied Spinetail *Mazaria propinqua*. The data presented contribute to our cumulative knowledge of the natural history of birds in floodplain forests, a historically neglected environment in the Amazon.

In general, knowledge of the breeding biology of Neotropical birds remains limited, and many species still lack basic descriptions of their nests and eggs (Marini *et al.* 2010, Xiao *et al.* 2017). In the Amazon Basin, many species are practically unknown in terms of basic aspects of their natural history. This lack of knowledge is even more profound for birds that occur in the biome's floodplains (Remsen & Parker 1983), which historically have received less attention than upland species (Cohn-Haft *et al.* 2007). Here, we provide new data on the breeding biology of six species nesting in this floodplain habitat, based on field work in Brazil and Ecuador.

The Ecuadorian study site (HFG) was on the banks of the upper Napo River near Ahuano, prov. Napo, at 375 m (01°01'57.4"S, 77°35'11.7"W). This area is flat and rocky, with isolated patches of regenerating vegetation dominated by *Gynerium* cane and small, fast-growing trees and shrubs (e.g., *Inga*, *Cecropia*, *Calliandra*). The area is flooded several times annually, usually in May–July (see Greeney 2014 for further information). The Brazilian locality, studied by TNM, lies on the upper Madeira River, in the municipality of Porto Velho and the district of Jaci Paraná, state of Rondônia, in south-west Brazilian Amazonia. The Madeira is the largest muddy-water affluent of the Solimões / Amazonas system, and one of the largest rivers in the world, accounting for 50% of sediment input and 15% of total discharge in the Solimões / Amazonas system (Goulding *et al.* 2003, Latrubesse *et al.* 2017). The Madeira basin covers 1,380 km², or 20.1% of the Amazon Basin (Goulding *et al.* 2003). The river rises in the Bolivian Andes and has a total length of 3,400 km, of which 1,500 km flows through Brazilian territory. Mean rainfall in the Madeira basin varies from 2,000 to 2,500 mm, with the wet season in December–April and the peak flood downstream of Porto Velho in March–April, with large variations in water level, 10.8–12.4 m difference between the dry and wet seasons (Goulding *et al.* 2003). Data were collected sporadically, using binoculars. Nest descriptions follow the nomenclature proposed by Simon & Pacheco (2005).

WHITE-BEARDED HERMIT *Phaethornis hispidus*

On 15 June 2018 TNM found an empty hummingbird nest in the understorey of *várzea* forest c.56 km downstream of Porto Velho (08°35'33.7"S, 63°34'54.3"W). When revisited on 9 July 2018, the nest contained two nestlings, with their eyes still closed (Fig. 1). After a few minutes, an adult *P. hispidus* appeared and fed the nestlings. The nest, a funnel-shaped cup,



Figure 1. White-bearded Hermit *Phaethornis hispidus* nest with two nestlings, Rondônia, Brazil, June 2018 (Tomaz Nascimento de Melo)

was sited 1.01 m above ground in a *Costus* (Costaceae) plant (Fig. 1). The cup measured 31 × 52 mm internally, and was 130 mm tall externally, with an elongated 'tail' of 70 mm at the base of the cup. The nest comprised fine, pale, dry palm fibres, tightly bound with spider webs, and attached to the underside of a damaged strip of leaf. Overall, the nest's



Figure 2. Plain-winged Antshrike *Thamnophilus schistaceus* fledgling, Rondônia, Brazil, June 2018 (Tomaz Nascimento de Melo)

shape, composition, height and attachment were similar to those of a nest of the species found in June 2016, in Mato Grosso state, Brazil (C. P. Figueiredo; <https://www.wikiaves.com/1234488>). The elongated leaf of *Costus* sp. used here, offered a similar substrate to the leaves of understorey palms, which are among the most frequently used nest substrates of the genus *Phaethornis* (Ruschi 1949, Oniki 1970, Greeney *et al.* 2018).

PLAIN-WINGED ANTSHRIKE *Thamnophilus schistaceus*

On 15 June 2018 a pair of *T. schistaceus* was observed in the same floodplain forest as that where the nest of *Phaethornis hispidus* was found. The two birds gave constant alarm calls and circled me. Searching for a possible nest, a single fledgling was found, perched 2 m above ground (Fig. 2). From its appearance, the young had probably fledged the same or previous day. Nests have been described from Brazil in February and October, and from Peru in March and September (Zimmer & Isler 2003).

WHITE-BELLIED SPINETAIL *Mazaria propinqua*

On 17 February 2011, HFG observed an adult spinetail carrying food to a nest at the Ecuadorian locality described above. Three days later, while examining the nest, a single fledgling flew from its entrance and disappeared into a nearby tangle of vegetation. On 24 February he collected the nest and made the following observations. The nest was an enclosed, globular mass of dry vegetative material, entered via a laterally oriented tube, and sited 60 cm above ground. It was supported from below by three nearly horizontal crisscrossed stalks of *Gynerium* cane and many smaller stems and leaf blades. Overall, the nest was 300

mm long, including the globular portion that contained the nest chamber and the 120 mm-long entrance tube. Externally, the tube was c.130 mm wide and 110 mm tall, with a near-circular, upward-facing opening at the distal end, 40 mm in diameter. The main portion of the nest was 160 mm wide externally (measured perpendicularly to the entrance tube) and 200 mm tall. The nest and entrance fairly uniformly comprised coarsely interwoven dead sticks and thick leaf petioles, with the exception of a 5–6 cm-thick layer of additional materials piled atop the nest chamber. The additional materials, including *Gynerium* leaf blades, bark strips and a few pieces of plastic, were wider and more pliable than the sticks used elsewhere in the construction, and undoubtedly served both as camouflage and waterproofing. Internally, the nest chamber was roughly spherical, 80 mm in diameter. It was unlined except a c.1–2 cm-thick cup of soft materials covering the bottom and forming a loose, poorly shaped cup (Fig. 3A). Internally, the cup was approximately 60 mm wide and 15–20 mm deep (post-fledge), and comprised fragments of skeletonised leaves, small, soft, papery dicot leaves, seed down, and fragments of snake skin.

On 6 July 2018 a pair was observed building a nest on Ilha dos Bufalos (09°10'51.6"S, 64°30'45.2"W), Jaci Paraná, Brazil. The site is dominated by *Tessaria integrifolia* (Asteraceae) reaching 4–5 m above ground and by *Echinochloa* sp. (Poaceae), up to 1 m tall. The only material used to construct the nest was fine twigs of *T. integrifolia*. The two birds observed building vocalised frequently. The nest was sited 1.63 m above ground and the interior measured 130 × 105 mm (Fig. 3). A complete but apparently old nest was found within

5 m of that under construction, presumably from an earlier breeding effort. This latter nest conformed to the closed globular type (Fig. 3B), the entrance via a horizontal tube (Fig. 3C) of the same shape and material of that under construction. Like the nest under construction, it was sited in the fork of a *T. integrifolia* 1.26 m above ground, and measured 220 mm high by 230 mm long by 150 mm wide, with an access tube 80 mm long and an entrance hole 45 × 38 mm.

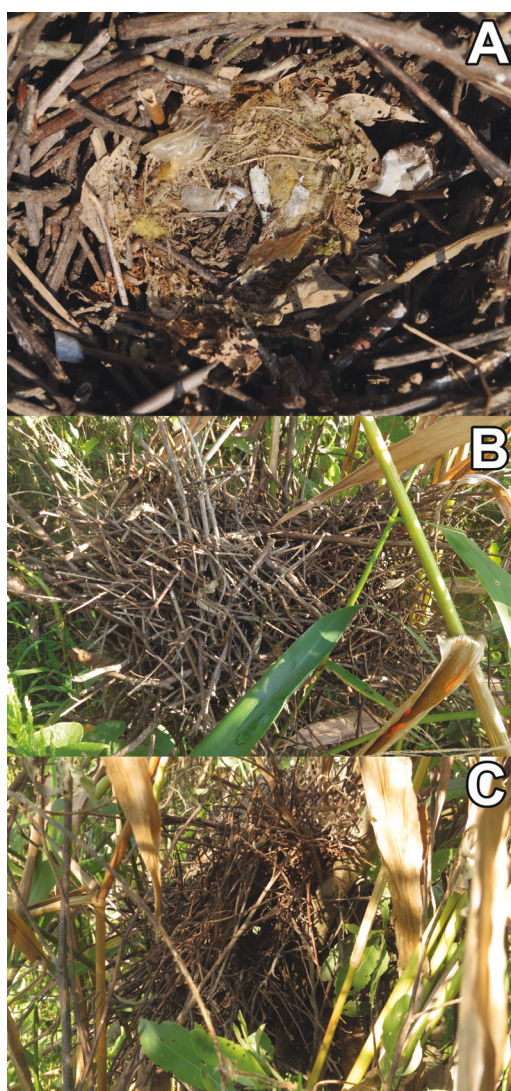


Figure 3. Nests of White-bellied Spinetail *Mazaria propinqua* showing interior chamber of the nest found on the upper Napo River, Ecuador, in February 2011 (A), and the nest found on a river island in the Madeira River, Rondônia, Brazil, July 2018, in lateral view (B) and its entrance (C) (A: Harold F. Greeney; B–C: Tomaz Nascimento de Melo)

Although a photo on Wikiaves illustrates a nest, also found on an island in the Madeira in December (R. S. Moreira; <https://www.wikiaves.com.br/1561495>), and two pairs were reported to be constructing nests on an island in the Branco River, northern Brazil, in mid October (Naka *et al.* 2007), ours are the first descriptions of this species' nest (Schulenberg & Rosenberg 2016), which is similar to that of related species of Furnariidae (Zyskowski & Prum 1999). The Ecuadorian nest fledged during the dry–wet season transition in that region (Blake & Loiselle 2012). The active nests in July and December indicate that the species breeds both early and late in the wet season along the Madeira River.

SPECKLED SPINETAIL *Cranioleuca gutturata*

On 15 June 2018 a nest under construction was found in a lowland forest, c.200 m from the *Phaethornis hispidus* nest described above. An adult was observed collecting green mosses in a nearby tree and depositing the material in the nest, which was a globular closed construction c.200 mm tall, of dry leaves and green mosses, especially the latter (Fig. 4), with a lateral entrance. The nest was sited on the fork of a branch of *Protium* sp. (Burseraceae), c.7 m above ground. On returning to the site on 10 July, the nest was apparently empty and no adult was observed. It is unknown whether the nest had been abandoned or not. There are very few published data concerning the species' breeding biology: Remsen (2003) mentioned nestbuilding in mid August in Peru, and the nest reported here was obviously similar to that described previously. A nest found in January, also in Brazil, was of similar shape and size, but with less green moss used in the construction (D. P. Fernandes; <https://www.wikiaves.com/1234488>).



Figure 4. Nest of Specked Spinetail *Cranioleuca gutturata* in floodplain várzea forest, Rondônia, Brazil, June 2018 (Tomaz Nascimento de Melo)



Figure 5. Nest of Spotted Tody-Flycatcher *Todirostrum maculatum* constructed on the root of a *Capsiandra* sp. (Fabaceae) near the Madeira River, Rondônia, Brazil, July 2018 (Tomaz Nascimento de Melo)

SPOTTED TODY-FLYCATCHER *Todirostrum maculatum*

On 8 July 2018 a nest was found on Ilha do Veados, 53 km downstream of Porto Velho (08°33'52.8"S, 63°38'46.6"W). Just one nestling was present, already with open eyes and completely feathered, and was being fed by the adults. The nest was sited in the aerial portion of a root of a *Capsiandra* sp. (Fabaceae), c.5 m from the bank of the Madeira River and 1.29 m above ground. It was a closed / oval structure, 200 mm long by 75 mm wide. Its lower portion also comprised an elongated 'tail' of 210 mm (Fig. 5). The nest entrance, located at one side, measured 25 × 35 mm. This species' breeding biology is comparatively well known, with eggs found throughout the year across its range, and the nest reported above is similar to previous descriptions (Walther 2004).

EULER'S FLYCATCHER *Lathrotriccus euleri*

On 6 September 2017 a nest was discovered in the same lowland forest where those of *Phaethornis hispidus* and *Cranioleuca gutturata* were found, sited in a dried cocoa *Theobroma cacao* fruit (Malvaceae), 1.24 m above ground (Fig. 6). The entrance was a hole in the side of the fruit, and the interior was covered by dark rootlets, small fibres and green moss, forming a shallow cup. It was not possible to take measurements, but the nest held two pinkish eggs with reddish-brown spots at the large end. Only one adult was observed at the nest. This species constructs a cup-shaped nest of fibres, and uses small holes (Farnsworth & Lebbin 2004). Londoño (2014) depicted a similar nest, in the Peruvian Amazon, with two apparently identical eggs, but constructed in a natural cavity. Possibly this is the first formal description of a nest of *L. euleri* in Amazonia, but its breeding biology in the south



Figure 6. Nest and eggs of Euler's Flycatcher *Lathrotriccus euleri* in a dried cocoa *Theobroma cacao* fruit (Malvaceae), Rondônia, Brazil, September 2017 (Tomaz Nascimento de Melo)

and south-east of its range is well known (Di Giacomo & López Lanús 1998, Aguilar *et al.* 1999, Marini *et al.* 2007, Auer & Bassar 2009). There, nests are shallow cups constructed in natural cavities in trees, fallen logs or in ravines, with a mean height above ground of 2 m. The clutch is two or three eggs.

Although Stouffer *et al.* (2013) did not identify a well-defined breeding season for central Amazonian upland birds, landscapes in the floodplains are subject to strong transformation between the dry and wet seasons due to the dynamics of the flood (Wittmann *et al.* 2010), which can alter the availability of nest sites (Beja *et al.* 2010). Of the species for which breeding activity was registered in the Madeira floodplain, five bred when water levels were falling (June/July) and one in the dry season (September). Although the same sites were sampled as in the early wet season (December), when the Madeira River is at its highest level (March) TNM did not find any evidence of nesting activity. However, Leite *et al.* (2016) found an active nest of Leaden Antwren *Myrmotherula assimilis* at the Juruá River during its peak flood (March). Environments in the floodplains change completely between the dry and wet season, creating different opportunities for nesting, presumably depending on the natural history attributes of a given species.

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