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Authors: Guilherme, Edson, and Lima, Jônatas M.

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The nest, eggs and nestling development of Fork-tailed Woodnymph *Thalurania furcata boliviana*

by Edson Guilherme & Jônatas M. Lima

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SUMMARY.—Fork-tailed Woodnymph *Thalurania furcata* is widely distributed in South America, but there are comparatively few data on its breeding biology. A nest found with two eggs in an urban forest fragment in Acre, south-west Amazonia, was monitored until the nestlings fledged. The use of fibres from rhizomes of the fern *Phlebodium decumanum* as the main material used in the nest is reported for the first time in this species. Similarly, daily variation in the mass and growth of the nestlings is presented for the first time. Nest and egg dimensions, as well as the nestling period, were similar to those reported previously.

The genus *Thalurania* comprises seven species distributed from Mexico to Argentina (Stiles *et al.* 2020). Fork-tailed Woodnymph *T. furcata* is the geographically most widespread species of the genus, occurring across most of tropical South America, including the Guianas, Paraguay, much of Brazil, eastern Venezuela, Colombia, Ecuador, Peru and Bolivia (Stiles *et al.* 2020). At least 13 subspecies of *T. furcata* are generally accepted (Stiles *et al.* 2020), 12 of which occur in Brazil (Piacentini *et al.* 2015) and at least three in the state of Acre (*T. f. jelskii*, *T. f. simoni* and *T. f. boliviana*) (Guilherme 2016). The species inhabits the edge and interior of forest, occasionally plantations and more open areas (Stiles *et al.* 2020). Although it occurs in a wide geographic range, information on reproduction of this species is quite limited (Stiles *et al.* 2020). Formal descriptions of Fork-tailed Woodnymph nests in the literature are available only from north-east Brazilian Amazonia (*T. f. furcata*) and Amazonian Ecuador (*T. f. viridipectus*) (Ruschi 1986, Greeney & Gelis 2008). We present here for the first time descriptions of the nest, eggs and nestling development of *T. furcata* in south-west Brazilian Amazonia.

Methods

Study area.—We studied a nest of *T. furcata* in the Zoobotanical Park of the Universidade Federal do Acre (UFAC) (09°57'03.22"S, 67°52'30.65"W), in the city of Rio Branco, capital of Acre state, in the south-western Brazilian Amazon. Descriptions of the ecosystems and avifauna of the area can be found in Guilherme (2001).

Measurements, monitoring and marking.—We measured the nest and eggs using digital callipers. Eggs and nestlings were weighed using a digital scale (0.05 g precision). We visited the nest every two days during the observation period. We banded the nestlings using numbered metal rings supplied by CEMAVE (Centro Nacional de Pesquisa e Conservação de Aves Silvestres), under the scope of project 1099, coordinated by EG (senior bird bander, reg. no. 324654). Once the nest was no longer active, we collected it and deposited it in the nest collection of the UFAC ornithology laboratory (reg. no. AC 0043).

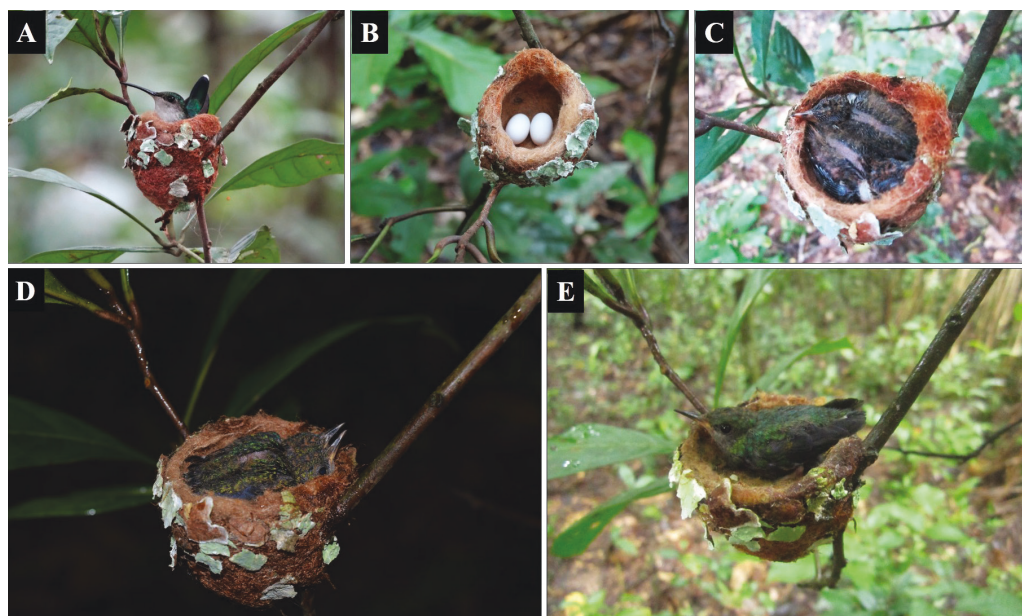


Figure 1. Nest, eggs and nestlings of Fork-tailed Woodnymph *Thalurania furcata boliviiana* in south-west Brazilian Amazonia: (A) female incubating the eggs; (B) view of the nest showing the eggs; (C) nestlings with feathers growing on all body tracts; (D) feathered nestlings; (E) one of the nestlings the day prior to fledging (A, B and D: Edson Guilherme; C and E: Jônatas Lima)

Results

On 4 January 2016 we found a nest of Fork-tailed Woodnymph in the forest understorey at the Zoobotanical Park, when it contained two eggs (Fig. 1A). The nest was sited in the two-way fork of a small understorey sapling (*cf. Ocotea* sp.; Lauraceae), 1.55 m above ground. The branches where the nest was built were 4.05 mm (main) and 2.41 mm (secondary) in diameter, respectively. The low cup / fork nest (*sensu* Simon & Pacheco 2005) was constructed primarily of fern ramenta and lined internally with pale brown kapok seed down (*Ceiba* sp.; Bombacaceae) (Fig. 1A–B). Comparing the ramenta of *Cyathea* sp. and *Phlebodium* sp., both common in the Zoobotanical Park, with those used in the nest, it was clear that the material in the latter was the *Phlebodium decumanum* rhizome (Fig. 2). There were few lichens adorning the outer wall (Fig. 1A) and spider webs on the rim of the cup (Fig. 1B). The nest measured as follows: height of the outer wall 47.0 mm; depth of cup 19.0 mm; external diameter 53.2 mm; internal diameter of cup 37.6 mm, and wall thickness 7.8 mm (the latter an average of three different measurements).

On 11 January we measured and weighed the two white eggs (Fig. 1B): 13×9 mm, 0.8 g; and 13×9 mm, 0.5 g. The nestlings hatched sometime between 12 and 13 January but were weighed for the first time only on 14 January (Fig. 3). The only traces of plumage on hatching are beige-coloured feathers on the dorsal spinal tract which are pushed up and out by the developing contour feathers. By 26 January (c.14 days after hatching) the body was wholly covered in well-developed feather papillae on the remiges and other tracts (Fig. 1C). On 29 January the nestlings were completely feathered (Fig. 1D).

On 14 January the nestlings weighed 1.2 and 1.3 g, respectively (Fig. 3). Over the next 14 days (until 28 January) the nestlings gained on average 0.47 ± 0.37 and 0.53 ± 0.36 g per day reaching the asymptote at 4.5 and 5.0 g, respectively (Fig. 3). Over the next four days their mass declined by c.0.025 and 0.12 g per day, to 4.4 and 4.5 g, respectively, on

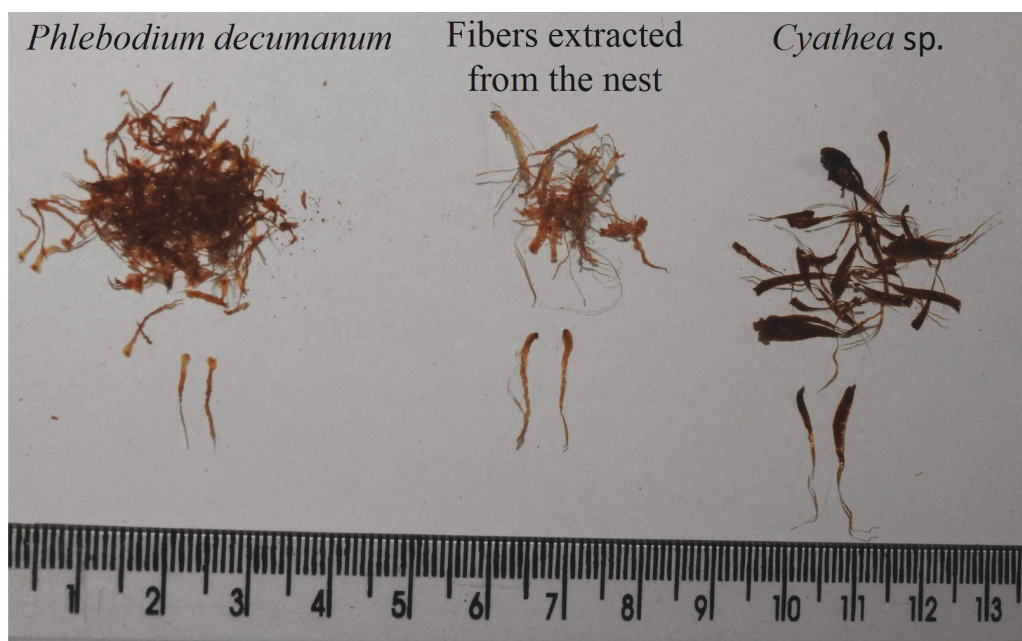


Figure 2. Comparison of rameta used in the construction of a Fork-tailed Woodnymph *Thaluranina furcata boliviiana* nest with that of leaves of arborescent ferns (*Cyathea* sp.) and rhizomes of *Phlebodium* ferns that occur in the Zoobotanical Park; note the similarity between the material used to built the nest (centre) and the rameta of *Phlebodium decumanum* (left) (Edson Guilherme)

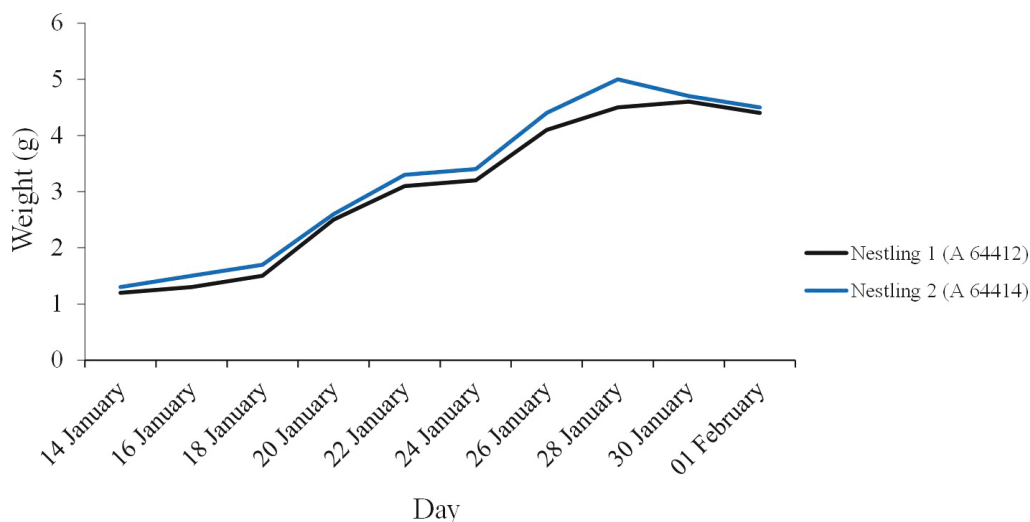


Figure 3. Mass gain of Fork-tailed Woodnymph *Thaluranina furcata boliviiana* nestlings in Acre, Brazil, over the development period (measurements taken every two days between 14 January and 1 February 2016).

1 February (Fig. 3) when they were last weighed. We ringed the nestlings the same day (ring codes A64412 and A64414). On 2 February just one nestling remained in the nest (Fig. 1E) and it was not present the next day. The max. duration of the nestling period was 21 days (assuming that the first nestling hatched on 12 January and fledged on 2 February 2016).

Discussion

Fork-tailed Woodnymph is common in south-west Amazonia, especially in Acre (Guilherme 2016), but it is poorly known ecologically. Although three races may occur in Acre, in the east of the state, where the Zoobotanical Park is situated, the subspecies is *T. f. boliviana* (Guilherme 2009). The species constructs its forked nest low above ground as reported elsewhere (Stiles *et al.* 2020). Almost all nest biometrics reported here were similar to those reported from Ecuador by Greeney & Gelis (2008), except internal diameter. In Acre and the nests from north-east Amazonian Brazil reported by Ruschi (1986), the internal diameter of the cup was relatively larger (almost double) than that of the Ecuador nests. This difference is perhaps explained by the time when the nests were measured: in our case, these were made when the nest had already been collected, whereas the measurements of the Ecuadorian nest were taken in the field during the incubation period (Greeney & Gelis 2008). The description of the eggs, and their sizes, were practically identical to those reported by Greeney & Gelis (2008) from Ecuador, and Brazil (Stiles *et al.* 2020). Unlike other hummingbird nests that are extensively decorated with lichens on their outer walls for camouflage (McCormac & Showman 2009), the Acre nest had practically no external decoration (Fig. 1), somewhat like that described by Greeney & Gelis (2008) in Ecuador.

The type of material used in the cup differed slightly from that reported in Ecuador, which contained much seed down in the external wall (Greeney & Gelis 2008). Ruschi (1986) stated that Fork-tailed Woodnymph constructs the outer walls with rammenta of arborescent ferns, and lines the nest with fibres of Bromeliaceae, Gramineae and Brobaceae. This description is quite different from the Acre nest. Comparison of the material used to construct the cup of the latter nest with rammenta of the unique arborescent ferns (*Cyathea* sp.) in the Zoobotanical Park was not compatible, but did match rhizome fibres of the epiphytic fern *Phlebodium decumanum* (Fig. 2). Use of fern rammenta of *P. decumanum* is reported here for the first time for *T. furcata*, although this type of material (not identified to species) is often reported for other hummingbirds and passerines (Greeney *et al.* 2010, Fjeldså *et al.* 2020). Indeed, the material described in the Ecuador nest as 'brown plant fibres' (Greeney & Gelis 2008) was clearly fern rammenta.

Development of the nestling is also presented here for the first time. Nestlings gain weight until the 16th day and then lose mass slowly until they fledge, which is similar to growth patterns in other families of birds (Seixas & Mourão 2003, Guilherme & Souza 2013) including hummingbirds (Muir & Butler 1925, Vereá 2016).

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References:

- Fjeldså, J., Boesman, P. & Kirwan, G. M. 2020. Eastern Mountaineer (*Oreonympha nobilis*). In del Hoyo, J., Elliott, A., Sargatal, J., Christie, D. A. & de Juana, E. (eds.) *Handbook of the birds of the world Alive*. Lynx Edicions, Barcelona (retrieved from <https://www.hbw.com/node/55608> on 17 February 2020).
- Greeney, H. F. & Gelis, R. A. 2008. Further breeding records from the Ecuadorian Amazonian lowlands. *Cotinga* 29: 62–68.
- Greeney, H. F., Juiña J., M. E., Harris, J. B. C., Wickens, M. T., Winger, B., Gelis, R. A., Miller, E. T. & Solano-Ugalde, A. 2010. Observations on the breeding biology of birds in south-east Ecuador. *Bull. Brit. Orn. Cl.* 130: 61–68.

- Guilherme, E. 2001. Comunidade de aves do Campus e Parque Zoológico da Universidade Federal do Acre, Brasil. *Tangara* 2: 57–73.
- Guilherme, E. 2009. Avifauna do estado do Acre: composição, distribuição geográfica e conservação. Ph.D. thesis. Museu Paraense Emílio Goeldi, Univ. Federal do Para, Belém.
- Guilherme, E. 2016. *Aves do Acre*. Edufac, Rio Branco.
- Guilherme, E. & Souza, I. R. 2017. Nestling development of the tropical screech-owl (*Megascops choliba*): a successful case report from the southwestern Amazon. *Acta Amazonica* 47: 269–272.
- McCormac, J. & Showman, R. E. 2010. Lichen composition in Blue-gray Gnatcatcher and Ruby-throated Hummingbird nests. *Ohio Cardinal* fall & winter 2009/2010: 72–82.
- Muir, A. & Butler, A. L. 1925. The nesting of the Emerald Hummingbird (*Saucerottia tobaci erythronota*) in Trinidad. *Ibis* 67: 648–654.
- Piacentini, V. Q., Aleixo, A., Agne, C. E., Maurício, G. N., Pacheco, J. F., Bravo, G. A., Brito, G. R. R., Naka, L. N., Olmos, F., Posso, S., Silveira, L. F., Betini, G. S., Carrano, E., Franz, I., Lees, A. C., Lima, L. M., Pioli, D., Schunck, F., Amaral, F. R., Bencke, G. A., Cohn-Haft, M., Figueiredo, L. F. A., Straube, F. C. & Cesari, E. 2015. Annotated checklist of the birds of Brazil by the Brazilian Ornithological Records Committee / Lista comentada das aves do Brasil pelo Comitê Brasileiro de Registros Ornitológicos. *Rev. Bras. Orn.* 23: 91–298.
- Ruschi, A. 1986. *Aves do Brasil. Beija-flores*, vols. 4–5. Expressão e Cultura, Rio de Janeiro.
- Seixas, G. H. F. & Mourão, G. 2003. Growth of nestlings of the Blue-fronted Amazon (*Amazona aestiva*) raised in the wild or in captivity. *Orn. Neotrop.* 14: 295–305.
- Simon, J. E. & Pacheco, S. 2005. On the standardization of nest description of neotropical birds. *Rev. Bras. Orn.* 13: 143–154.
- Stiles, F. G., Kirwan, G. M. & Boesman, P. 2020. Fork-tailed Woodnymph (*Thalurania furcata*). In del Hoyo, J., Elliott, A., Sargatal, J., Christie, D. A. & de Juana, E. (eds.) *Handbook of the birds of the world Alive*. Lynx Edicions, Barcelona (retrieved from <https://www.hbw.com/node/55461> on 14 February 2020).
- Verea, C. 2016. Nest and nestling development of the Sooty-capped Hermit (*Phaethornis augusti*) from Venezuela. *Rev. Bras. Orn.* 24: 338–343.

Addresses: Edson Guilherme, Laboratório de Ornitologia, Centro de Ciências Biológicas e da Natureza, Universidade Federal do Acre, Rio Branco, AC, Brazil, e-mail: guilherme.edson@gmail.com. Jônatas Lima, Programa de Pós-Graduação em Ecologia e Manejo de Recursos Naturais, Universidade Federal do Acre, Rodovia BR 364, km 4, Distrito Industrial, 69915-900, Rio Branco, AC, Brazil; and Laboratório de Ornitologia, Centro de Ciências Biológicas e da Natureza, Universidade Federal do Acre, Rio Branco, AC, Brazil, e-mail: jonatasornito@gmail.com