

A new species of the genus *Hylexetastes* (Dendrocolaptidae) from eastern Amazonia

by José Maria Cardoso da Silva, Fernando C. Novaes & David C. Oren

Received 14 November 1994

The Red-billed Woodcreeper *Hylexetastes perrotii* and the Uniform Woodcreeper *H. uniformis* were first considered to be two independent species (Hellmayr 1908, 1910), but later they were merged in a single polytypic species, *H. perrotii* (Cory & Hellmayr 1925, Pinto 1938, 1978, Peters 1951). Recently, Ridgely & Tudor (1994) suggested that *H. perrotii* and *H. uniformis* should be regarded as separate species again.

H. perrotii was described by Lafresnaye in 1844, possibly from a specimen collected at Cayenne, French Guiana (Hellmayr 1908, 1910). Its range includes eastern Venezuela, the Guianas, and northern Brazil, south to the north bank of the lower Amazon (Fig. 1). *H. uniformis* was described by Hellmayr (1908) based on specimens collected in Calama, Amazonas, on the right bank of the Madeira River. Its distribution includes all the region south of the Amazon between the Madeira and Xingu Rivers (Fig. 1).

One specimen of a possible undescribed taxon of the genus *Hylexetastes* was collected in the northern part of the Brazilian state of Mato Grosso (Base Camp, 12°54'S, 51°52'W), between the Araguaia and Xingu Rivers (Fry 1970). This specimen represented the first documented record of *Hylexetastes* east of the Xingu River. Since 1984, the ornithology section of the Museu Paraense Emílio Goeldi (MPEG) has collected ten new specimens of *Hylexetastes* for the region between the Xingu and Tocantins-Araguaia Rivers. The examination of these specimens confirms that the population of *Hylexetastes* from this region represents a new taxon, which may be known as:

***Hylexetastes brigidai* sp. nov.**

Holotype. Museu Paraense Emílio Goeldi (MPEG) no. 37215, collected by M. S. Brígida and R. S. Pereira on 25 June 1985 in the Serra dos Carajás, Serra Norte, Distrito do Manganês, Pará, Brazil, 6°06'S, 50°18'W, c. 600 m above sea level. The specimen is an adult male (testes 6 × 3 mm) with a completely pneumatized skull.

Diagnosis. *H. brigidai* can be distinguished from the nearest *H. uniformis* by the following characters: (a) the chin and throat washed with Yellow Ocher, (b) belly Buff barred with Clay Color (Fig. 1), and (c) under wing-coverts crossed with dusky bars. *H. brigidai* differs from *H. perrotii* by the following: (a) lores Pale Gray rather than whitish, (b) lack of the conspicuous white malar stripe (Fig. 1), and (c) colour of belly a little lighter.

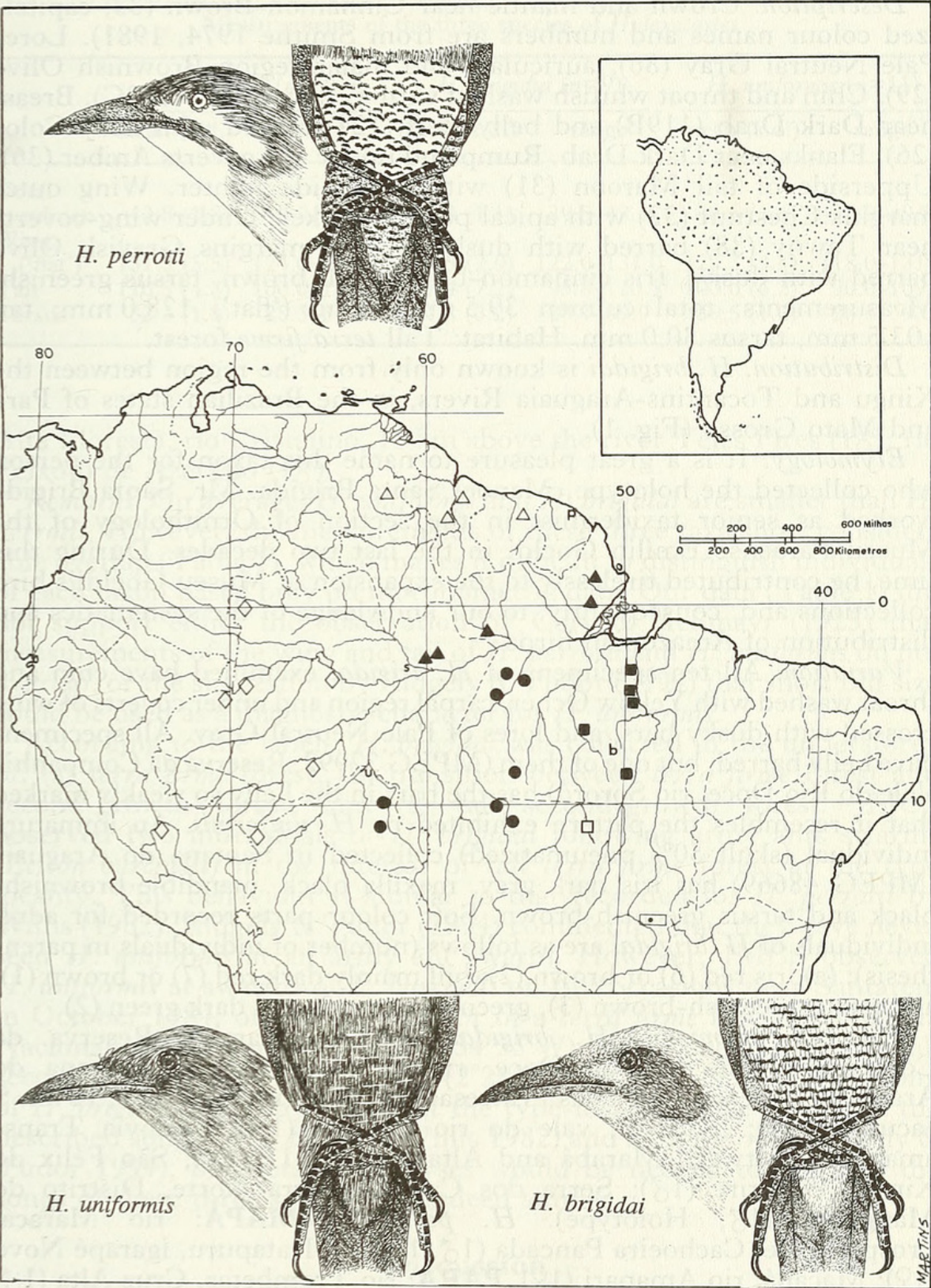


Figure 1. Distribution of the four species of *Hylexetastes* in South America, with sketches of *H. perrotii*, *H. brigidai* and *H. uniformis*. Triangles, *H. perrotii*; squares, *H. brigidai*; circles, *H. uniformis*; rhombuses, *H. stresemanni*. Closed symbols indicate localities of specimens examined, open symbols records from the literature. Type localities are indicated as follows: p, *H. perrotii*; b, *H. brigidai*; u, *H. uniformis*; s, *H. stresemanni*.

Description. Crown and mantle near Cinnamon-Brown (33; capitalized colour names and numbers are from Smithe 1974, 1981). Lores Pale Neutral Gray (86), auriculars and malar region Brownish Olive (29). Chin and throat whitish washed with Yellow Ocher (123C). Breast near Dark Drab (119B) and belly Buff (124) barred with Clay Color (26). Flanks near Dark Drab. Rump and upper tail-coverts Amber (36). Upperside of tail Maroon (31) with underside lighter. Wing outer margins Chestnut (32) with apical portion darker. Under wing-coverts near Tawny (38) barred with dusky. Carpal margins Grayish Olive barred with dusky. Iris cinnamon-brown, bill brown, tarsus greenish. Measurements: total culmen 39.5 mm; wing ('flat') 128.0 mm; tail 103.5 mm, tarsus 30.0 mm. Habitat: Tall *terra firme* forest.

Distribution. *H. brigidai* is known only from the region between the Xingu and Tocantins-Araguaia Rivers, in the Brazilian states of Pará and Mato Grosso (Fig. 1).

Etymology. It is a great pleasure to name this taxon for the person who collected the holotype, Manoel Santa Brígida. Mr. Santa Brígida worked as senior taxidermist in the section of Ornithology of the Museu Paraense Emílio Goeldi in the last two decades. During this time, he contributed tirelessly to the expansion of Museu Goeldi's bird collections and, consequently, to our knowledge of the systematics and distribution of Amazonian birds.

Variation. All ten specimens of *H. brigidai* examined have chin and throat washed with Yellow Ocher, carpal region and under coverts of wing crossed with dusky bars, and lores of Pale Neutral Gray. All specimens have belly barred, but one of them (MPEG 37992, Reserva da Companhia Vale do Rio Doce, rio Sororó) has the bars in the belly so weakly marked that it resembles the pattern exhibited by *H. uniformis*. An immature individual (skull 50% pneumatized) collected in Santana do Araguaia (MPEG 48669) has iris dark grey, maxilla black, mandible brownish-black and tarsus greenish-brown. Soft colour parts recorded for adult individuals of *H. brigidai* are as follows (number of individuals in parenthesis): (a) iris red (6) or brown (2); bill mainly dark red (7) or brown (1); and tarsus greenish-brown (3), greenish-grey (2) and dark green (2).

Material examined. *H. brigidai*: **PARÁ**: Marabá, Reserva da Companhia Vale do Rio Doce, rio Sororó (1♂, 1♀); Santana do Araguaia, Fazenda Barra das Princesas (1♀, 2♂); rio Tocantins, 12 km S Jacundá (1♂); Tucuruí, vale do rio Caraipé (1♂); Rodovia Transamazônica between Marabá and Altamira, km 12 (1♂); São Félix do Xingu, Gorotire (1♂); Serra dos Carajás, Serra Norte, Distrito do Manganês (1♂, Holotype). *H. perrotii*. **AMAPÁ**: rio Maracá, Prosperidade, Cachoeira Pancada (1♂, 1♀); rio Iratapuru, igarapé Novo (1♀); Macapá, rio Amapari (1♀). **PARÁ**: rio Trombetas, Cruz Alta (1♂, 1♀). **AMAZONAS**: Manaus, Reserva Ducke (1♂); BR-174, 137 km N of Manaus (1♂); rio Uatumã, 5 km S rio Pitanga (1♀). *H. uniformis*. **PARÁ**: Rio Tapacurazinho, km 25 Transamazônica (1♂, 1♀); Rodovia Santarém-Cuiabá, km 84 (1♂); Santarém, Floresta Nacional do Tapajós (1♀); Parque Nacional da Amazônia (1♂, 1?). **RONDÔNIA**: rio Jiparaná, cachoeira Nazaré, west bank of rio Jiparaná (3♀); Ouro Preto do Oeste (1♂); Jiparanã, sítio Novo Tupassi (1♂). **MATO GROSSO**:

TABLE 1
Measurements of the three species of *Hylexetastes*

	<i>H. perrotii</i> (n=9)		<i>H. brigidai</i> (n=9)		<i>H. uniformis</i> (n=11)	
	mean (s.d.)	range	mean (s.d.)	range	mean (s.d.)	range
Total culmen	42.8 (1.8)	40.9–45.5	40.8 (1.1)	39.5–43.1	40.6 (3.6)	35.0–49.8
Wing ('flat')	131.3 (5.5)	124.0–142.0	126.5 (2.9)	122.0–131.0	123.3 (3.4)	118.0–131.0
Tail	110.5 (4.8)	100.0–116.0	107.4 (7.2)	95.8–120.5	100.0 (6.2)	90.0–109.5
Tarsus	32.3 (1.8)	28.5–34.0	31.8 (3.2)	29.1–39.9	30.5 (1.2)	28.6–33.0

Alta Floresta, rio Cristalino, 15 km above the river Teles Pires (1♂); rio Peixoto de Azevedo (1♂).

Remarks. On average, *H. uniformis* and *H. brigidai* are smaller than *H. perrotii*. However, the measurements of these three taxa show considerable overlap (Table 1), which makes it difficult to distinguish individuals of each taxon based only on morphometric data. Our data (Table 1) did not support either the observation by Cory & Hellmayr (1925) that measurements of the wing and tail of *H. perrotii* and *H. uniformis* do not overlap, or the suggestion by Ridgely & Tudor (1994) that short bill size could be used as a diagnostic character for *H. uniformis*.

According to the labels, *H. brigidai* was collected in the understorey of: (a) *terra firme* forest, (b) transition between *terra firme* forest and second-growth forest, and (c) tall second-growth forest. JMCS observed two individuals of *H. brigidai* following army ants swarms (*Eciton burchelli*) in the interior of tall *terra firme* forest at the type locality. This behaviour is similar to that recorded for *H. perrotii* by Willis (1982). Ridgely & Tudor (1994) commented that they have never seen *H. uniformis* at an army ant swarm. However, JMCS observed *H. uniformis* at swarms of *E. burchelli* on two occasions near Santarém in October 1984: one in the interior of a *terra firme* forest at Floresta Nacional do Tapajós (2°50'S, 54°55'W), and another in a tall second-growth forest at Urumari (2°28'S, 54°43'W). Notes on the song of *H. brigidai* heard by JMCS at the type-locality agree well with the described songs of *H. perrotii* (Willis 1982) and *H. uniformis* (Ridgely & Tudor 1994); but detailed analyses would be needed to verify if the songs of these three species are indeed similar.

Discussion

Based on similarities in plumage, *H. perrotii*, *H. brigidai* and *H. uniformis* could be considered as a monophyletic group, whose sister-taxon is *H. stresemanni*, from western Amazonia (Fig. 1). However, if strict cladistic procedures are applied, no unambiguous set of relationships among these four species can be recovered through analysis of plumage characters. In this case, molecular studies are required to assess the phylogenetic relationships within the genus.

The ranges of species of the genus *Hylexetastes* constitute one more case of parapatric distribution of closely related Amazonian birds, whose ranges are delimited by some of the major rivers of the Amazon drainage (Fig. 1). Different from some species discussed by Haffer (1992), the species of *Hylexetastes* do not show any evidence of hybridization in the headwaters of the rivers that separate their ranges (Fig. 1). This strongly supports the recognition of the diagnosable taxa of this genus as distinct biological or phylogenetic species (Hellmayr 1910, Ridgely & Tudor 1994) rather than as subspecies of a single polytypic and widespread species (Cory & Hellmayr 1925, Pinto 1938, 1978, Peters 1951). We predict that genetic distances between species of *Hylexetastes* will be at least as high as those reported for other well-marked Amazonian forest species (Caparella 1988, 1991, Hackett & Rosenberg 1990, Hackett 1993).

Rivers seem to be an effective barrier for species of *Hylexetastes*, which are usually restricted to the understorey of Amazonian *terra firme* forests and have very low population densities (Willis 1982). The simplest hypothesis to explain the pattern of distribution and differentiation in *Hylexetastes* is that based on the river theory (Snethlage 1910, Sick 1967). This model holds that some species of Amazonian forest birds have evolved by the fragmentation of the range of a common ancestor by the development of the modern drainage system in the Amazon basin during the Late Tertiary (Petri & Fúlfaro 1983). Haffer (1992) has pointed out the following problems with the river theory: (a) the problem of speciation in strong-flying canopy birds that readily cross broad rivers; (b) the differentiation of species which inhabit river-created vegetation zones along floodplains and river banks; (c) the dynamics of some Amazonian rivers with frequent transfer of extensive portions of land between opposite margins; (d) the conspicuously reduced barrier effect of large rivers during periods of lowered sea-level of the Pleistocene; (e) the occurrence of numerous secondary contact zones between Amazonian birds in interfluvial regions and therefore unrelated to large rivers.

Before discussing these points, we must stress that the river theory, as we understand it, is not a model than can be applied to all Amazonian birds. Rather, its application is limited to those birds (a) restricted to forest understorey and (b) with low dispersal capability (Snethlage 1910, Sick 1967). In this aspect, it is similar to the refuge model, which only can be applied to species with rigid ecological fidelity (Vanzolini 1981). Clearly, speciation of strong-flying canopy species and of species associated with river-created vegetation zones cannot be explained by the river theory. The frequent transfer of extensive parcels of land from one side to another is an important characteristic mainly of the white-water rivers in Upper Amazonia (e.g. Juruá, Purús; see Sioli 1984), which usually are not considered as important barriers by proponents of the river theory. To consider that some of the major rivers in Amazonia had their barrier effects reduced during the periods of lowered sea-level during the Quaternary, it is also necessary to have much more paleoecological data than is currently available. Mainly, it is necessary to show that tall humid forests rather

than another type of vegetation occupied the terrain left by the reduction of the water-level of these rivers. Finally, we tallied all secondary-contact zones of Amazonian birds listed by Haffer (1974: 95) that are not associated with present-day ecological barriers (e.g. savannas in Roraima, white-sand campinas in the lower Rio Negro, transition from Amazonia to the *cerrado* region) or presence of rivers. They included only 6 (24%) of 25 cases listed by Haffer (1974). All of them (*Pionopsitta*, *Pteroglossus*, *Ramphastos*, *Xipholena*, *Phoenicircus* and *Psarocolius*) are canopy rather than understorey birds. Obviously, these cases could never be explained by the river theory and another biogeographical model will be required. In summary, Haffer's arguments did not reject the river theory as a simple and parsimonious model for explaining the current patterns of differentiation and distribution in forest understorey birds.

The diversification in Amazonian birds is indeed a complex subject, with no simple or single explanation. We have to know much more about the geographical distribution, ecological requirements and phylogenetic relationships of the products of the diversification process, i.e. species, in order to evaluate properly the different hypotheses proposed so far. To continue arguing for or against the importance of one model (refuge theory) over another (river theory) without this additional critical information promises to shed little new light on biogeographical problems in Amazonia.

Acknowledgements

Our studies are supported by the Brazilian Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq), Brasília, Brazil. Research in Serra dos Carajás was supported by the Companhia Vale do Rio Doce (CVRD). JMCS received support from the Danish Natural Science Research Council (Grant J. nr. 4964-93). We thank Dr H. A. Camargo for information about H. Fry's specimen housed at the Museu de Zoologia, Universidade do São Paulo, Dr D. W. Snow for critical review of the first draft of the manuscript, and Mr A. S. Martins for drawing Figure 1.

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Addresses: J. M. C. da Silva, Zoological Museum, University of Copenhagen, Universitetsparken 15, DK-2100, Copenhagen, Denmark. F. C. Novaes & D. C. Oren, Museu Paraense Emílio Goeldi, Departamento de Zoologia, C.P. 399, 66017-970 Belém, Pará, Brazil.

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The turtle doves of Bird Island, Seychelles

by Chris J. Feare & Elaine L. Gill

Received 22 November 1994

The granitic islands of the Seychelles had an endemic subspecies of turtle dove *Streptopelia picturata rostrata*, characterised by a general dull reddish-brown plumage (Goodwin 1970). On the main granitic islands and on most of the smaller ones, the Seychelles subspecies has been replaced by the nominate form *S. p. picturata* from Madagascar, which was introduced to the Seychelles, possibly around 1850 (Lever 1987); this bird is paler and has a grey head. The replacement of the endemic by the introduced form is considered to have resulted largely through hybridisation (Penny 1979). However, on two small islands (Cousin, Cousine, both free of introduced predators) birds showing characteristics of the Seychelles form persist, together with some individuals showing intermediate characters (Diamond 1984). These same islands have retained populations of several other endemic species that have become extinct on islands with large populations of introduced predators. The short-winged *rostrata* (Benson 1967) may have been more vulnerable to introduced predators than the longer-winged *picturata*, and both predation and hybridisation may have contributed to the extinction of the former.



1995. "A new species of the genus *Hylexetastes* (Dendrocolaptidae) from eastern Amazonia." *Bulletin of the British Ornithologists' Club* 115, 200–206.

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