

## New distributional records for some birds from *várzea* forest at Mamirauá Reserve, western Brazilian Amazonia

José Fernando Pacheco

Departamento de Zoologia, Instituto de Biologia, Universidade Federal do Rio de Janeiro, Cidade Universitária, 21944-970 Rio de Janeiro, RJ, Brasil

Recebido em 30 de abril de 1995; aceito em 25 de julho de 1995

**RESUMO.** Novos registros distribucionais para algumas aves das florestas de *várzea* da Reserva Mamirauá, oeste da Amazônia brasileira. O inventário da avifauna nas florestas sazonalmente inundadas do médio Solimões na área incorporada pela Reserva Mamirauá, estado do Amazonas, vem sendo conduzido desde janeiro de 1993, sob a coordenação do sub-programa "Sistemas terrestres" do Projeto Mamirauá. Esta nota visa relacionar vinte relevantes extensões de distribuição verificadas desde então, compilando a informação comprobatória disponível sobre suas respectivas ocorrências, sobretudo na Amazônia brasileira.

**PALAVRAS-CHAVE:** Amazonas, aves, Brasil, distribuição geográfica, inventário, *várzea*.

**KEY WORDS:** Amazonas, avifaunal survey, birds, Brazil, geographical distribution, *várzea*.

The *várzea*, or seasonally flooded forest, and some other river-created habitats (beaches and sandbars, sandbar scrub, and river edge forest) contribute in significant percentage to the total land bird avifauna of the Amazon Basin (Remsen and Parker 1983, Rosenberg 1990). The main area of occurrence of *várzea* habitats in Brazil spreads along the floodplains of the major white-water rivers such as the Solimões/Amazon, Madeira, Purus, and Juruá. *Várzea* forest is absent from the black-water rio Negro and its tributaries, where is replaced by *igapó*. Differences in composition of plants between these two forest types reported by several botanists (Ayres 1993) indicate that it is best to consider them as separate habitats, and suggests that similar differences might be seen in others groups of living

organisms. Generally, white-water rivers and its *várzeas* are richer in species and biomass than black- and clear-water rivers with *igapó* (Ayres 1986). These two main categories of flooded forests reveal some differences in composition of the avifauna not treated by Remsen and Parker (1983), but this level of distinction awaits further study. Furthermore, as a result of the influence of tidal activities on the *várzea* complex situated in lower Amazonia, this sector has been regarded as distinct (Prance 1980). *Várzeas* in the drainage of such clear-water rivers as the Xingu, Tapajós, Tocantins, and Araguaia (which are intermediate in nutrient content between white- and black-water; Sioli 1965), are likewise distinct.

I investigated the distinctness of the avifauna of these two

habitats in my present studies of two of the largest conservation units in Amazonian Brazil: Mamirauá Reserve or Mamirauá Ecological Station (EEM) on the north (left) bank of the rio Solimões and Jaú National Park, in the rio Negro drainage. I report here some noteworthy records of birds from the várzea habitats of the upper Amazonian region, mostly in the vicinity of the EEM and primarily from the perspective of avian distribution within Brazil.

The EEM is a vast, contiguous block of well preserved várzea forest in the region of the middle Solimões (figure 1). Its 1,240,000 ha comprise a complex mosaic of ecosystems from young successional habitats on river islands to climax várzea forest. Its eastern border (03°07'S, 64°47'W) includes the delta of the rio Japurá at its confluence with the Solimões, while its western limits reach the rio Auati-Paraná (02°31'S, 67°20'W). The limits of the EEM are coincident with the range of the threatened nominate subspecies of White Uakari, *Cacajao c. calvus*, and are partially coincident with the range of a recently described species of Squirrel Monkey, *Saimiri vanzolinii*, (Ayres 1985). The plan to conserve these species and the Mamirauá ecosystem was conceived by J. M. Ayres during research for his PhD thesis on Uakaris. The challenge to protect this magnificent area was initiated when Ayres founded Sociedade Civil Mamirauá to carry out the management plan of EEM in 1991, with resources from various organizations. Thenceforth, the Mamirauá Project has involved more than 100 persons including researchers and support crew. My avifaunal survey of the EEM started in early 1993 and has contributed to the consolidation of the programme in some respects.

I made observations over the course of five field expeditions to the EEM and adjacent regions between January 1993 and September 1994. All the records listed here were documented by tape-recordings, except the non-residents *Muscixicola fluviatilis* and *Notiochelidon cyanoleuca*. Tape record-

ings were made with Sony TCM-5000 tape recorder, and Sennheiser ME-80 shotgun microphone. All tape recordings have been or will be archived at the Arquivo Sonoro Prof. Elias P. Coelho (ASEC) sound collection, Universidade Federal do Rio de Janeiro, Rio de Janeiro and the Library of Natural Sounds (LNS), Cornell Laboratory of Ornithology, Ithaca, New York. The taxonomy sequence follows Sibley and Monroe 1990.

#### Species accounts

##### Brown-troated Parakeet *Aratinga pertinax*

Forshaw (1989) listed fourteen races of this species and admitted that the exact range of *A. p. chrysogenys* of Western Brazil is undetermined, mentioning only the rio Negro region for distribution of this race. Although *A. p. chrysogenys* has been described formerly from the rio Negro region (see Zimmer and Phelps 1951), with further records by A. R. Wallace at Santa Isabel (Sclater and Salvin 1867), and J. Natterer at Airão (Pelzeln 1870), this region has been omitted from the species range in some catalogues (Cory 1918, Peters 1937, Sick 1993). Additionally, this species has been recorded in Brazil in Roraima and the upper rio Tapajós (Sibley and Monroe 1990).

This parakeet was noted on several occasions, always along the northern border of the EEM which is in contact with the rio Japurá. Apparently it is uncommon in the study area, with observed flocks having up to 6 individuals. The present report from Mamirauá represents, together with an overlooked record of this species from Igarapé Belém, which is 400 km to the west of the Reserve (Aguirre and Aldrich 1983), a first citation for the rio Solimões basin.

##### Olive-spotted Hummingbird *Leucippus chlorocercus*

This obligate river island species of the upper Amazon region (Rosenberg 1990) is fairly common on islands in the rio Solimões and rio Japurá in the vicinity of the EEM.

Although Sneath (1914) included this hummingbird in the avifauna of Brazilian Amazonia ("Upper Amazon"), she did not mention a voucher specimen. This undocumented record was repeated by subsequent compilers (Meyer de Schauensee 1966, Pinto 1978, Sibley and Monroe 1990, Sick 1993).

Vielliard (1994) mentioned one male from Benjamin Constant, opposite Letícia, Colombia, collected by A. Ruschi in October 1963. This record represents the first known specimen for Brazil. This species also occurs in the Solimões in the Tabatinga area (Forrester 1993) and on ilha Marchantaria, near Manaus (B. Whitney, pers. comm. 1994).

##### Yellow Tyrannulet *Capsiempis flaveola*

This species is absent in the region along rio Solimões west of the drainage of rio Madeira (Ridgely and Tudor 1994); however, I found a small population of this species along the northern sector of the EEM. This record represents a westward range extension of approximately 600 km in the Solimões basin. The nearest record in this region are from Rosarinho and Santo Antônio do Guajará (Zimmer 1955), but it also occurs in the rio Negro basin, where The National Geographic Society's Expedition collected one specimen at Providência (Friedmann 1948), about 300 km northward of the Mamirauá site.

##### River Tyrannulet *Serpophaga hypoleuca*

This sandbar scrub specialist of young age islands (Rosenberg 1990) is uncommon in appropriate habitat at the EEM, occurring both in the lower rio Japurá and the rio Solimões systems.

Although this species could be expected to occur along rio Solimões, it remains known in Brazil only from south of the Amazon on both banks of lower rio Madeira (Traylor 1979, Sibley and Monroe 1990, Ridgely and Tudor 1994), following the published record of specimens secured at Santo Antonio do Guajará and Parintins (Zimmer 1940). My records at Mami-

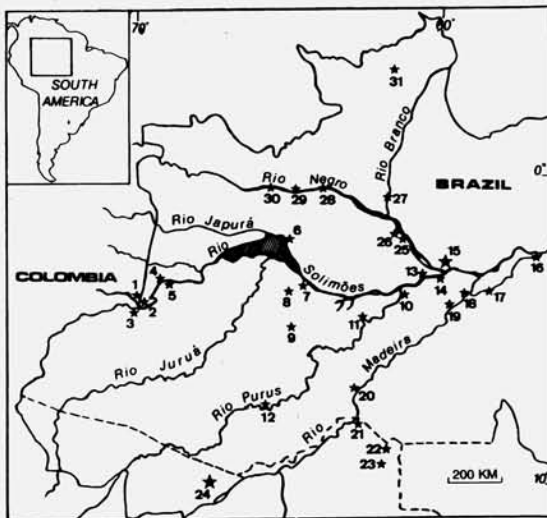


Figure 1. Map showing localities mentioned in text: 1. Letícia, Colombia; 2. Tabatinga; 3. Benjamin Constant; 4. Igarapé Belém; 5. São Paulo de Olivença; 6. Paraíso; 7. Tefé; 8. Ponta da Castanha; 9. Urcu; 10. Lago Berury; 11. Itaboca; 12. Hiutanahan; 13. Manacapuru; 14. Ilha Marchantaria; 15. Manaus; 16. Parintins; 17. Lago do Batista; 18. Santo Antônio do Guajará; 19. Rosarinho; 20. Crato; 21. Calama; 22. Maroins; 23. Cachoeira Nazaré; 24. City of Rio Branco; 25. Airão; 26. Boca do Jaú; 27. Lower Rio Branco; 28. Providência; 29. Santa Isabel; 30. Cauabury; 31. Maracá Ecological Station. Shaded area shows Mamirauá Ecological Station (EEM).

rauí represent the first report of this species for the north bank of rio Solimões in Brazil. I have also tape-recorded this species on a young island in the lower rio Branco, Roraima (01°00'S, 61°48'W) on 7 October 1993. In addition, the River Tyrannulet occurs in western Brazilian Amazon on ilha Marchantaria (B. Whitney recordings, pers. comm. 1994) and Tefé (Forrester 1993).

#### Large-headed Flatbill *Ramphotrigon megacephala*

Several pairs of this species were found at the EEM associated with bamboo thickets mainly in westernmost sector. The only other records of this flatbill from Brazilian Amazonia, all from south of the Amazon/Solimões are from the upper rio Juruá, Acre (Novaes 1960), rio Urucu, Amazonas (Peres and Whittaker 1991), Cachoeira Nazaré, Rondônia and Alta Floresta, Mato Grosso (Ridgely and Tudor 1994). The present records at Mamirauá represent the first site on the north bank of the rio Solimões.

#### Little Ground-Tyrant *Muscisaxicola fluvialis*

I found this species on two occasions on the middle rio Solimões. The first was on mud-flats near lago Tefé on the periphery of the urban area, feeding associated with some Yellow-browed Sparrows *Ammodramus aurifrons*, and Common Ground-Doves, *Columbina passerina*, on 1 July 1993. On the second occasion I saw one individual walking on a floating trunk close to a submerged young island in the lower rio Japurá on 15 July 1993, 30 km west of the first site. In addition to several recent sight records at Cachoeira Nazaré, Rondônia by D. Stotz (A. P. Leão, pers. comm. 1992), this ground-tyrant has been secured on only two occasions in Brazil: below Crato, upper rio Madeira, on 14 November 1829, by J. Natterer (Pelzeln 1870), and at Maruins, Rondônia, on 9 June 1908 by W. Hoffmanns (Hellmayr 1910). This species was also observed between August and October by P. Roth in rio Aripuanã, Mato Grosso (A. P. Leão, pers. comm. 1992). The inclusion of the rio Purus in the majority of recent catalogues (Meyer de Schauensee 1966, Traylor 1979, Sibley and Monroe 1990) is apparently based on an undocumented citation by Naumburg (1930). This record was not considered by Gyldenstolpe (1951) in his work on the avifauna of the rio Purus. Sick (1993) suggested that this species "may enter in Brazil only in migration". If this is correct, the earliest known record is 9 June and the latest 14 November.

#### Dull-capped Attila *Attila bolivianus*

This várzea forest Attila is a common species at the EEM. The only previous records for western Brazilian Amazonia are from the upper rio Juruá (Pinto 1944, Gyldenstolpe 1945, Novaes 1957) and the upper rio Purus (Snethlage 1908). Although this species was known from the Leticia area (J. V. Remsen in Hilty and Brown 1986), my record from Mamirauá represents the first for the north bank of the Amazon inside Brazil.

#### Black-crested Antshrike *Sakesphorus canadensis*

This species is uncommon to fairly common at the EEM. Its existence in my study area represents the first reported locality from the left bank of rio Solimões inside Brazil. Although reported twice from Tefé (Hellmayr 1907, Zimmer 1933) its only site on the right bank of rio Solimões, these records have been overlooked by some recent authors (Sibley and Monroe 1990, Ridgely and Tudor 1994).

#### Blackish Antbird *Cercomacra nigrescens*

This swampy forest species is uncommon in the northern sector of the EEM under the influence of rio Japurá. It also inhabits middle-aged and old islands situated in the same sector. Its records in my study area represent the first report for the north bank of rio Solimões (see Ridgely and Tudor 1994), and parallel a sight record from the Leticia area (Hilty and Brown 1986). The nearest records in Brazil are an uncertain

sight record from the rio Urucu (Peres and Whittaker 1991) and Itaboca, lower rio Purus (Gyldenstolpe 1951).

#### Plumbeous Antbird *Myrmeciza hyperythra*

This bird's range in Brazil is restricted to south of the rio Amazon east to the rio Purus (Sibley and Monroe 1990) or east only to around Tefé (Ridgely and Tudor 1994). In fact its distribution does extend to the rio Purus (Snethlage 1908, Gyldenstolpe 1951). This várzea forest species of upper Amazonia is one of the most numerous undergrowth species of the EEM, as it is in the upper rio Juruá area (Gyldenstolpe 1945, Novaes 1957). The nearest records to my study area, all of which are on the opposite bank are from: Tefé (Zimmer 1932), Ponta da Castanha (Johns 1991), and rio Urucu (Peres and Whittaker 1991). My records of this antbird from the north bank of rio Solimões in Brazil, are preceded by an overlooked report from igarapé Belém (Aguirre and Aldrich 1983).

#### White-shouldered Antbird *Myrmeciza melanoceps*

This species was described by Spix (1825) from material collected at an unspecified locality along the upper Amazon. It is known that his expedition reached only Tabatinga, on the border of Colombia, on 9 January 1820, and went downriver soon after (Hellmayr 1906). Although Spix (1825) defined the type locality as "in sylvis Parae", the specimens almost certainly came from the westernmost portion of his journey. Cory and Hellmayr (1924) proposed rio Içá, Northwestern Brazil, as the type locality, because they knew that Spix never crossed into Colombia or Peru (even though all other known records of this species were from Colombia, Ecuador and Peru). In addition, this poorly known species in Brazil was secured at five localities from the upper rio Juruá (Gyldenstolpe 1945, Novaes 1957), and there is a recent sight record from the Tabatinga area (Forrester 1993).

At the EEM this lowland upper Amazonian endemic antbird was found together with Plumbeous Antbird in the westernmost sector of the reserve, foraging near the ground in a dense formation of *Heliconia* plants. This record represents an eastward extension of about 500 km of its known range.

#### White-bellied Spinetail *Synallaxis propinqua*

This furtive species is fairly common in the understory of early succession stages of river island habitat in the lower rio Japurá and rio Solimões, around the EEM. Although considered a common obligate island species in Northeastern Peru (Rosenberg 1990), its known range in Brazil (see map in Ridgely and Tudor 1994) is represented by widely separated localities, as Zimmer (1936) noted many years ago. Described from the lower rio Madeira area (Pelzeln 1870), this furnariid has been collected only in the upper rio Juruá (Ihering 1905), Santo Antônio de Guajará, left bank of lower rio Madeira and Baião, lower rio Tocantins (Zimmer 1936). Recent sight records (without details) come from around Tefé and Manaus (Forrester 1993). This species is fairly common on ilha Marchantaria, rio Solimões near Manaus (B. Whitney recordings, pers. comm. 1994). Additionally, I tape-recorded several individuals on a young island in the lower rio Branco, Roraima (01°00'S, 61°48'W) on 6 October 1993.

#### Orange-fronted Plushcrown *Metopothryx aurantiacus*

I have been able to find only two published specimen records of this species for the Brazilian Amazon: Hiutanaã, upper rio Purus (Gyldenstolpe 1951), and São Paulo de Olivença, rio Solimões (Traylor 1972). This canopy species of riverine habitats restricted to the upper Amazon region was uncommon on middle-aged and old islands, as well as in várzea forest at the EEM. A sight record in July 1989 for rio Solimões downriver from Tefé (Forrester 1993) extends to the East its known range in the Solimões basin.

#### Coraya Wren *Thryothorus coraya*

The absence of this species on the rio Solimões according to recent catalogues (Ridgely and Tudor 1989, Sibley and

Monroe 1990), is artifactual. This wren is present, but uncommon in the *várzea* forest of the EEM and *terra firme* forest edge of the left bank of the rio Japurá, at Paraíso. The nearest previous record is from Cauabury, upper rio Negro (Friedmann 1948), situated 200 km northward, in the rio Negro drainage. Additionally, it occurs in the Letícia area (Hilty and Brown 1986) and adjacent Tabatinga, Brazil (Forrester 1993), both localities situated upriver on the same bank of the rio Solimões.

#### Blue-and-white Swallow *Notiochelidon cyanoleuca*

Although widespread in most parts of South America, only a few individuals of this swallow have been recorded in the lowlands of the Amazon Valley, except at its far western sector (Zimmer 1955a). It apparently does not breed in Amazonia, the scattered records being of the migratory southern population. The locality Benevides, near Belém, where one bird was taken on 13 September 1918, remains perhaps the sole published specimen record in the Brazilian Amazon (Griscom and Greenway 1941, Sick 1993). I have two widely separated Amazonian records from Boca do Lago Mamirauá, EEM (03°07'S, 64°47'W) on 25 August 1994, and Macapá, capital of Amapá (00°02'S, 51°03'W) on 10 January 1994. The first of these was of one individual seen over the river associated with White-winged Swallows, *Tachycineta albiventer*. A similar situation was observed by Haverschmidt (1968) for migrant individuals of this species in Surinam. The second record was of four individuals flying over an urban area. The subspecific allocation of populations in Amazonia in one of the two southern races of this species (*patagonica* and *cyanoleuca*) remains in part uncertain (Zimmer 1955a). Several sight records between January and October in French Guiana suggest a special migration and residence issue (Tostain *et al.* 1992). In addition, recent sight records for this species in Brazilian Amazonia, all lacking details, are from Manaus, Tefé, and city of Rio Branco, Acre (Forrester 1993).

#### Masked Yellowthroat *Geothlypis aequinoctialis*

This species inhabits shrubby areas on islands in the vicinity of the EEM, where it is uncommon throughout the year. Although recorded only from the lower Amazon region (Ridgely and Tudor 1989, Sibley and Monroe 1990), the present report for Mamirauá, together with records from Santo Antônio do Guajará, left bank of the lower rio Madeira (Zimmer 1949), and the city of Rio Branco, Acre (Forrester 1993) indicate that its range is more widespread to the west in appropriate habitats.

#### Bicolored Conebill *Conirostrum bicolor*

According to Hellmayr (1935), the population of this species from the rio Tapajós westward was considered subspecifically distinct and named *C. b. minor*. The Amazon population (at least of this race) is restricted to shrubby areas on islands, being one of the obligate island species (Rosenberg 1990). I found this conebill on islands in the vicinity of the EEM, where it is a common arboreal species, especially on islands dominated by *Cecropia* trees. Although indicated as absent from the region roughly between Letícia area and the mouth of rio Madeira (Ridgely and Tudor 1989), this species probably has a continuous range along the rio Solimões. This hypothesis is supported by the present report from the EEM, and by reports from the Tefé area (Forrester 1993), and ilha Marchantaria, near Manaus (B. Whitney recordings, pers. comm. 1994). In addition, I found this species on a young island in the lower rio Branco, Roraima (01°00'S, 61°48'W) on 6 October 1993, which seems to be the northernmost inland record for this species in Brazil.

#### Orange-headed Tanager *Thlypopsis sordida*

In upper Amazonia this species occupies the riverine forest edge and river islands; it is not, however, an obligate island habitat species (Rosenberg 1990). It was described as a subspecies, *T. s. chrysopsis* (Hellmayr 1936), and its published

specimen records for Brazilian Amazonia are restricted to the only from upper rio Madeira region: São José do Crato (Pelzel 1870), Maruins, rio Machado (Hellmayr 1910), and Calama (Naumburg 1930). This tanager is uncommon on islands in the vicinity of the EEM. Its presence on rio Solimões is complemented by reports upriver near Letícia, Colombia (Hilty and Brown 1986) and from Tefé and Manaus, the last classified as "accidental" (Forrester 1993), although B. Whitney (pers. comm. 1994) considers it a resident on ilha Marchantaria near Manaus.

#### Orange-fronted Yellow-Finch *Sicalis columbiana*

This riparian species occurs regularly at the EEM, mainly in places dominated by floating grass, *Paspalum* sp.. The westernmost published specimen records for Brazil are lago Berury, lower rio Purus (Gyldenstolpe 1951), and Manacapuru, lower rio Solimões (Pinto 1938). The present report, together with a citation for Tefé (Forrester 1993), represents a western range extension of approximately 400 km. Paralleling the situation of *Leistes militaris* (see above), there is an old record for Loreto, Peru (Ridgely and Tudor 1989). In addition, I found a few individuals at Boca do Jaú, in the middle rio Negro region (01°53'S, 61°25'W) on 3 October 1993, which seems to be the northernmost inland record for this species in Brazil.

#### Red-breasted Blackbird *Leistes militaris*

This unmistakable species inhabits open areas in Amazonia and is certainly spreading its range with deforestation (Hilty and Brown 1986, pers. obs.). I regularly found groups during the dry season in adjacent pastures to the EEM and in the city of Tefé. The previous, westernmost limit in Brazilian Amazonia for this invader species, was Manacapuru, left bank of the lower rio Solimões, where five specimens were collected in October 1936 (Pinto 1938). In addition, there is one old record from the western Amazon basin at Loreto, Peru (Ridgely and Tudor 1989), and a possible recent sight record in the Letícia area (Forrester 1993).

#### ACKNOWLEDGMENTS

I am grateful to Bret M. Whitney, Luiz P. Gonzaga, Claudia Bauer, Peter Lonergan, Cecília P. Moura, Adriana Fiuza, Henrique Rajão for useful comments on the manuscript and help in various other important respects. I extend special thanks to J. Márcio Ayres, coordinator of Mamirauá Project, who allowed access to the reserve grounds and facilities, and Aristides Pacheco Leão (1914-1993) President Emeritus of Academia Brasileira de Ciências, for his guidance over the years. My studies in the EEM are supported by Overseas Development Administration, World Wildlife Fund, World Conservation Society and Sociedade Civil Mamirauá.

#### REFERENCES

- Aguirre, A. C. and A. D. Aldrich (1983) *Catálogo das aves do Museu da Fauna*. Primeira parte. Rio de Janeiro: CNPq.
- Ayres, J. M. (1985) On a new species of Squirrel Monkey, *Genus Saimiri*, from Brazilian Amazonia (Primates, Cebidae). *Pap. Av. Dep. Zool.*, São Paulo 36(14):147-164.
- (1986) *Uakaris and Amazonian flooded forest*. Unpublished PhD thesis. Univ. Cambridge, UK.
- (1993) *As matas de várzea do Mamirauá*. Brasília: MCT-CNPq. Programa do Trópico Úmido.
- Cory, C. B. (1918) *Catalogue of Birds of the Americas*. part II no. 1. Field Mus. Nat. Hist., zool. ser., XIII. (Publ. 203).
- Cory, C. B. and C. E. Hellmayr (1924) *Catalogue of Birds of the Americas*. part III. Field Mus. Nat. Hist., zool. ser., XIII. (Publ. 223).
- Forrester, B. C. (1993) *Birding Brazil. A check-list and Site Guide*. Irvine, UK: John Geddes.

- Forshaw, J. M. (1989) *Parrots of the world*. Third revised edition. Melbourne: Lansdowne Ed.
- Friedmann, H. (1948) Birds collected by the National Geographic Society's expeditions to Northern Brazil and southern Venezuela. *Proc. U.S. Nat. Mus.* 97:373-570.
- Griscom, L. and J. C. Greenway (1941) Birds of lower Amazonia. *Bull. Mus. Comp. Zool.* 81:417-437.
- Gyldenstolpe, N. (1945) The bird fauna of rio Juruá in western Brazil. *K. Svenska Vetensk. Akad. Handl.*, ser. 3. 22(3): 1-338.
- (1951) The ornithology of the rio Purus region in western Brazil. *Ark. Zool.*, 2nd ser. 2:1-320.
- Haffer, J. (1974) *Avian speciation in tropical South America, with a systematic survey of the toucans (Ramphastidae) and Jacamars (Galbulidae)*. Cambridge, Mass.: Nuttall Ornith. Club (Publ. 14).
- Haverschmidt, F. (1968) *Birds of Surinam*. Edinburgh and London: Oliver and Boyd.
- Hellmayr, C. E. (1906) Revision der Spix'schen Typen brasilianischer Vögel. *Abh. Ak. Wiss., Math-Phys. Kl., München* 22:561-726.
- (1907) On a collection of birds from Teffé, rio Solimões, Brazil. *Novit. Zool.* 14:1-39.
- (1910) The birds of the rio Madeira. *Novit. Zool.* 17: 257-428.
- (1935) *Catalogue of Birds of the Americas*. part.VIII Field Mus. Nat. Hist., zool. ser., XIII (Publ. 347).
- (1936) *Catalogue of Birds of the Americas*. part IX. Field Mus. Nat. Hist., zool. ser., XIII (Publ. 365).
- Hilty, S. L. and W. L. Brown (1986) *A guide to the birds of Colombia*. Princeton: Princeton Univ. Press.
- Ihering, H. (1905) O rio Juruá. *Rev. Mus. Paulista* 6:385-460.
- Johns, A. D. (1991) Responses of Amazonian rain forest birds to habitat modification. *Journ. Trop. Ecol.* 7:417-437.
- Meyer de Schauensee, R. (1966) *The species of Birds of South America and their distribution*. Narberth: Acad. Nat. Sci. Philadelphia.
- Naumburg, E. M. B. (1930) The birds of Matto Grosso, Brazil. *Bull. Amer. Mus. Nat. Hist* 60(1):1-432.
- Novaes, F. C. (1949) Variação nos tucanos brasileiros do gênero *Ramphastos* L. (Ramphastidae, Piciformes). *Rev. Bras. Biol.* 10:199-208.
- (1957) Contribuição à ornitologia do noroeste do Acre. *Bol. Mus. Para. Emílio Goeldi*, n.s., zool. 9:1-30.
- (1960) Sobre "*Ramphotrigon megacephala*" (Swainson) (Tyrannidae, Aves). *Rev. Bras. Biol.* 20(2):217-221.
- Pelzeln, A. (1870) *Zur Ornithologie Brasiliens. Resultate von Johann Natterers Reisen in den Jahren 1817 bis 1835*. Wien: Druck und Verlag von A. Pichler's Witwe and Sohn.
- Peres, C. A. and A. Whittaker (1991) Annotated checklist of the bird species of the upper rio Urucu, Amazonas, Brazil. *Bull. Brit. Orn. Cl.* 111(3):156-171.
- Peters, J. L. (1937) *Check-list of birds of the world*, vol.3. Cambridge, Mass.: Harvard Univ. Press.
- Pinto, O. M. O. (1938) Nova contribuição a ornithologia amazonica. Estudo critico de uma collecção de aves do baixo Solimões e do alto rio Negro. *Rev. Mus. Paulista* 23: 493-604.
- (1944) *Catálogo das aves do Brasil*. Passeriformes 2ª parte. São Paulo: Dep. Zool. Secr. Agric. Ind. Com.
- (1978) *Novo catálogo das aves do Brasil*. Primeira parte. São Paulo: Emp. Gráf. Rev. Tribunaís.
- Prance, G. T. (1980) A terminologia dos tipos de florestas amazônicas sujeitas a inundação. *Acta Amazonica* 10(3): 495-504.
- Remsen, J. V., Jr. and T. A. Parker, III (1983) Contribution of river-created habitats to bird species richness in Amazonia. *Biotropica* 15(3):223-231.
- Ridgely, R. S. and G. Tudor (1989) *The birds of South America*. vol.1. The oscine passerines. Austin: Univ. Texas Press.
- (1994) *The birds of South America*. vol.2. The suboscine passerines. Austin: Univ. Texas Press.
- Rosenberg, G. H. (1990) Habitat specialization and foraging behavior by birds of Amazonian River Islands in North-eastern Peru. *Condor* 92:427-443.
- Sclater, P. L. and O. Salvin (1867) List of birds collected by Mr. Wallace on the lower Amazon and rio Negro. *Proc. Zool. Soc. London*: 566-596.
- Sibley, C. G. and B. L. Monroe, Jr. (1990) *Distribution and taxonomy of birds of the world*. New Haven: Yale Univ. Press.
- Sick, H. (1993) *Birds in Brazil*. Princeton: Princeton Univ. Press.
- Sioli, H. (1965) Bemerkungen zur Typologie amazonischer Flüsse. *Amazoniana* 1:74-83.
- Snethlage, E. (1908) Eine Vogelsammlung vom rio Purus, Brasilien. *Journ. für Ornith.* 56:7-24.
- (1914) Catálogo das aves Amazônicas contendo todas as especies descritas e mencionadas até 1913. *Bol. Mus. Para. Emílio Goeldi* 8:1-530.
- Spix, J. B. (1825) *Avium species novae, quas itinere per Braziliam annis 1817-20 collegit et descripsit*. vol.2. Monachii.
- Tostain, O., J-L. Dujardin, C. Erard and J. M. Thiollay (1992) *Oiseaux de Guyane*. Paris: Société d'Études Ornithologiques.
- Traylor, M. A., Jr. (1972) Notes on *Metopothrix aurantiacus*. *Auk* 89:455-456.
- (1979) Tyrannidae. In M. A. Traylor, Jr.[ed.], *Checklist of the birds of the world*. vol.8. Cambridge, Mass.: Mus. Comparative Zoology.
- Vielliard, J. M. E. (1994) *Catálogo dos troquilídeos do Museu de Biologia Mello Leitão*. Santa Teresa: Museu de Biologia Prof. Mello Leitão.
- Zimmer, J. T. (1932) Studies of Peruvian Birds VI. The Formicarian genera *Myrmoborus* and *Myrmeciza* in Peru. *Amer. Mus. Novit.* 545:1-24.
- (1933) Studies of Peruvian Birds XI. The genera *Taraba* and *Sakesphorus*. *Amer. Mus. Novit.* 668:1-17.
- (1936) Studies of Peruvian Birds. XXI. Notes on the genus *Synallaxis*. *Amer. Mus. Novit.* 861:1-26.
- (1940) Studies of Peruvian Birds XXXIV. The genera *Todirostrum*, *Euscarthmornis*, *Snethlagea*, *Poecilotriccus*, *Lophotriccus*, *Myiornis*, *Pseudotriccus*, and *Hemitriccus*. *Amer. Mus. Novit.* 1066:1-23.
- (1949) Studies of Peruvian Birds 54. The Families Catamblyrhynchidae and Parulidae. *Amer. Mus. Novit.* 1428:1-59.
- (1955) Further notes on Tyrant Flycatchers. *Amer. Mus. Novit.* 1749:1-24.
- (1955a) Studies of Peruvian birds. 66. The swallows (Hirundinidae). *Amer. Mus. Novit.* 1723:1-35.
- Zimmer, J. T. and W. H. Phelps (1951) New subspecies of birds from Surinam and Venezuela. *Amer. Mus. Novit.* 1511:1-10.