# Information Sheet on Ramsar Wetlands (RIS) – **2009-2012 version** Available for download from http://www.ramsar.org/ris/key_ris_index.htm.

*Categories approved by Recommendation 4.7 (1990), as amended by Resolution VIII.13 of the 8th Conference of the Contracting Parties (2002) and Resolutions IX.1 Annex B, IX.6, IX.21 and IX. 22 of the 9th Conference of the Contracting Parties (2005).*

**Notes for compilers:**

1. The RIS should be completed in accordance with the attached *Explanatory Notes and Guidelines for completing the Information Sheet on Ramsar Wetlands*. Compilers are strongly advised to read this guidance before filling in the RIS.

2. Further information and guidance in support of Ramsar site designations are provided in the *Strategic Framework and guidelines for the future development of the List of Wetlands of International Importance* (Ramsar Wise Use Handbook 14, 3rd edition). A 4th edition of the Handbook is in preparation and will be available in 2009.

3. Once completed, the RIS (and accompanying map(s)) should be submitted to the Ramsar Secretariat. Compilers should provide an electronic (MS Word) copy of the RIS and, where possible, digital copies of all maps.

**1. Name and address of the compiler of this form:**

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| DD | MM | YY | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | |
| Designation date | | | Site Reference Number | | | | | | | | |

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**2. Date this sheet was completed/updated:** 28 August of 2016

**3. Country:** Brazil

**4. Name of the Ramsar site:**
*The precise name of the designated site in one of the three official languages (English, French or Spanish) of the Convention. Alternative names, including in local language(s), should be given in parentheses after the precise name.*

Parque Nacional do Viruá (Viruá National Park)

**5. Designation of new Ramsar site or update of existing site:**

**This RIS is for** (tick one box only)**:**
**a) Designation of a new Ramsar site** ☑; or
**b) Updated information on an existing Ramsar site** ❑

**6. For RIS updates only, changes to the site since its designation or earlier update:**

**7. Map of site:**
*Refer to Annex III of the Explanatory Note and Guidelines, for detailed guidance on provision of suitable maps, including digital maps.*

**a) A map of the site, with clearly delineated boundaries, is included as:**

i) **a hard copy** (required for inclusion of site in the Ramsar List): ❑;

ii) **an electronic format** (e.g. a JPEG or ArcView image) ☑;

iii) **a GIS file providing geo-referenced site boundary vectors and attribute tables** ☑.

**b) Describe briefly the type of boundary delineation applied:**
*e.g. the boundary is the same as an existing protected area (nature reserve, national park, etc.), or follows a catchment boundary, or follows a geopolitical boundary such as a local government jurisdiction, follows physical boundaries such as roads, follows the shoreline of a waterbody, etc.*

The Viruá National Park is endowed with legally established limits based on geographical references, represented west by the Branco River, northeast the route BR-174, east by the design of the "Estrada Perdida" (road) and south by the Anauá river (Federal Decree of 29.04.1998).

**8. Geographical coordinates** (latitude/longitude, in degrees and minutes):
*Provide the coordinates of the approximate centre of the site and/or the limits of the site. If the site is composed of more than one separate area, provide coordinates for each of these areas.*

61º09'38.717" W and 01º19'54.705" N

**9. General location:**
*Include in which part of the country and which large administrative region(s) the site lies and the location of the nearest large town.*

The Viruá National Park is located in the south-central region of the State of Roraima, in the Municipality of Caracaraí. The access is via the federal highway BR-174, 200 km far from the capital Boa Vista, or 600 km from Manaus. The State of Roraima and the City of Caracaraí have 450,000 and 18,000 inhabitants, respectively (IBGE Census 2010). Located on the northern edge of the Northern "Pantanal", the Viruá NP provides facilities for research and ecotourism activities on these unique wetland ecosystems in the Brazilian Amazon.

**10. Elevation:** (in metres: average and/or maximum & minimum)

The landscape of Viruá National Park is predominantly flat and low, with the prevalence of heights between 40 and 55 m above sea level (Rossetti *et al.*, 2012). The maximum altitude is 360 m, recorded at the top of Viruá hill (Schaefer *et al.*, 2009, ICMBio 2014).

**11. Area:** (in hectares)

The area of the Viruá National Park is 216,427 ha.

**12. General overview of the site:**

*Provide a short paragraph giving a summary description of the principal ecological characteristics and importance of the wetland.*

The Viruá National Park is a protected area located in a megadiverse ecological region of "Campinaranas", in the lower Branco River/Medium Negro River, south-central of the State of Roraima. It covers a mosaic of forested and non-forested humid ecosystems, representative of a unique geo-ecological system in the Amazon, endowed with physical attributes (alluvial megafans, spodosols) and with a hydrological regime typical of wetlands (Zani *et al*, 2012; Schaefer *et al* ., 2009). Inventories of the biodiversity and ecological studies conducted in the Viruá National Park demonstrate exceptional levels of biodiversity (especially of fish and birds), high rates of fishing productivity and the occurrence of populations of vulnerable or endangered species. The Viruá, since 2009, has the largest number of freshwater fish species ever recorded in a Brazilian protected area (500 species, Ferreira *et al*, 2009; ICMBio, 2014) and supports exceptional levels of fishing productivity in the State (Lemos, 2009). It has one of the highest diversity of birds recorded in protected areas in Brazil (> 530 species), with 28 endemic species considered in the designation of the Important Bird Area RR04 - Fields and wetlands of the Branco River, of which the Viruá is part of. It maintains relevant habitats for ten species of mammals and six species of turtles under various levels of threat according to IUCN criteria (ICMBio, 2014). Achieving five criteria for the identification of wetlands of international importance, the designation of Viruá NP as a Ramsar site broadens significantly Brazil's contribution towards the conservation of global biological diversity and sustainable use of wetlands in the Brazilian Amazon.

**13. Ramsar Criteria:**

*Tick the box under each Criterion applied to the designation of the Ramsar site. See Annex II of the Explanatory Notes and Guidelines for the Criteria and guidelines for their application (adopted by Resolution VII.11). All Criteria which apply should be ticked.*

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|
| ☒ | ☒ | ☒ | ☐ | ☐ | ☐ | ☒ | ☒ | ☐ |

**14. Justification for the application of each Criterion listed in 13 above:**

*Provide justification for each Criterion in turn, clearly identifying to which Criterion the justification applies (see Annex II for guidance on acceptable forms of justification).*

**Criterion 1:** The Viruá National Park covers a mosaic of ecosystems, including Ombrophilous forest, Campinaranas, and pioneer formations representative of the Northern Pantanal, humid area with unique geological and biogeographical characteristics in the Brazilian Amazon, and inserted in the ecological region of the Campinaranas. It is situated in the Lower Branco River/Medium Negro River, with an area equivalent to 8,686,974 ha. The Northern Pantanal had its geographical boundaries, hydrological dynamics and physical aspects recently characterized by surveys conducted in the Viruá NP, wich became a reference site for the physical environment and the biodiversity knowledge of this system (Rossetti *et al*, 2012; Zani *et al*, 2012; Schaefer *et al*, 2009; ICMBio, 2014). The Northern Pantanal plays important roles on flood control, sediments depositional processes and biogeochemical cicles of the Lower Branco River and Demini River drainage systems.

**Criterion 2:** The Viruá National Park shelters populations of ten species of mammals, six species of turtles and five species of birds under various levels of threat, according to IUCN criteria (ICMBio, 2014). Among the mammals, the Guiana Spider Monkey *Ateles paniscus*, the Giant Anteater *Myrmecophaga tridactyla*, the Giant Armadillo *Priodontes maximus*, the Lowland Tapir *Tapirus terrestris*, the White-lipped Peccary *Tayassu pecari* and the South American Manatee *Trichechus inunguis* are all categorized as Vulnerable in the IUCN Red List, and the latter is also listed in Appendix I of CITES and appendix II of the Convention on the Conservation of Migratory Species of Wild Animals (CMS), as well as the Pink River Dolphin *Inia geoffrensis*. The Giant Otter *Pteronura brasiliensis,* categorized as Endangered by

the IUCN Red List and listed in Appendix I of CITES, also occurs in the site. Other three species, the Margay *Leopardus wiedii*, the Jaguar *Panthera onca* and the Bush Dog *Speothos venaticus* are categorized as near threatened in the IUCN Red List and are all listed in Appendix I of CITES.

Threatened birds species include three riverine species, and two large Neotropical eagles. The endemic Branco River Antbird *Cercomacra carbonaria* is categorized as Critically Endangered by the IUCN Red List. The Orinoco Goose *Neochen jubata* and the Klages's Antwren *Myrmotherula klagesi* are listed as Near Threatened in the IUCN Red List. The Harpy Eagle *Harpia harpyja* and the Crested Eagle *Morphnus guianensis* are categorized as Near Threatened by the IUCN Red List, and are listed respectively in the Appendix I and II of CITES.

Five testudines species recorded in Viruá NP are categorized as Vunerable by the IUCN Red List: the Yellow-footed Tortoise *Chelonoidis denticulate*, the Big-headed Amazon River Turtle *Peltocephalus dumerilianus*, the Red-headed Amazon River Turtle *Podocnemis erythrocephala*, the Six-tubercled Amazon River Turtle *Podocnemis sextuberculata* and the Yellow-spotted River Turtle *Podocnemis unifilis*. All of these species are listed in the Appendix II of CITES. The South American River Turtle *Podocnemis expansa* as the Black Caiman *Melanosuchus niger* are listed as Lower Risk/conservation dependent in the IUCN Red List, and are listed in Appendix II of CITES.

**Criterion 3:** The Viruá National Park has an important role in the conservation and research of species in the Campinaranas ecosystems and Ombrophylous forests of the Northern Pantanal, in the ecological region of Campinaranas. The site has an exuberant richness of vertebrate species, > 1200 species (the largest ever recorded in a Brazilian protected areas) (ICMBio 2014), offering protection to populations of 119 species of mammals, 71 species of reptiles, 47 species of amphibians, and to exceptionally diverse groups of 531 bird species and 500 fish species. The variety of habitats allows the coexistence of different endemic species, dependent on forested or open areas physiognomies. The diversity of flora, currently with over 1200 species recorded, is estimated at more than 4000 species of plants, with 52 plant species endemics from Guiana Shield and 26 plant species endemics from Campinaranas recorded (ICMBio, 2014) (Appendix 1). Endemics plant species from Campinaranas recorded at Viruá NP include: *Piper goeldii* Piperaceae (open areas), *Duckeella pauciflora* Orchidaceae (open areas), *Lockhartia viruensis* Orchidaceae (flooded and lowland forests), *Xyris cryptantha* Xyridaceae (open areas), *Xyris subglabrata* Xyridaceae (open areas), *Hirtella dorvalii* Chrysobalanaceae (open areas), *Hirtella pimichina* Chrysobalanaceae (open areas), *Licania lanceolata* Chrysobalanaceae (open areas), *Licania stewardii* Chrysobalanaceae (open areas), *Clusia lopezii* Clusiaceae (open areas), *Clusia nitida* (open areas), *Vismia* sp. nov. (open areas, lowland forest), *Henriettea martiusii* Melastomataceae (flooded forest), *Pachyloma huberioides* Melastomataceae (open areas), *Siphanthera cowanii* Melastomataceae (open areas), *Lecythis corrugata* Poit. subsp. rosea Lecythidaceae (lowland forest), *Lecythis* sp. nov. Lecythidaceae (lowland florest), *Ferdinandusa schultesii* Rubiaceae (open areas), *Isertia* sp. nov Rubiaceae (open areas), *Morinda* cf. *aurantiaca* Rubiaceae (open areas, lowland forest), *Platycarpum egleri* Rubiaceae (open areas), *Platycarpum froesii* Rubiaceae (open areas), *Psychotria blakei* Rubiaceae (open areas), *Retiniphyllum discolor* Rubiaceae (open areas), *Utricularia chiribiquetensis* Lentibulariaceae (open areas), *Utricularia sandwithii* Lentibulariaceae (open areas).

The park is fully inserted into the Important Bird Area (IBA) RR04 - Fields and wetlands of the Branco River, having records of 28 endemics, or that have restricted distribution, species of birds associated with Campinaranas habitats and floodplain forests (De Luca *et al*, 2009). The endemics species from Campinaranas include *Pauxi tomentosa* Cracidae, *Aprositornis disjuncta* Thamnophilidae, *Heterocercus flavivertex* Pipridae, *Hemitriccus inornatus* Rhynchocyclidae, *Dolospingus fringilloides* Thraupidae. The endemics species from Guiana Shield are *Penelope marail* Cracidae*, Crax alector* Cracidae, *Galbula albirostris* Galbulidae, *Monasa atra* Bucconidae, *Capito niger* Capitonidae, *Pteroglossus viridis* Ramphastidae, *Veniliornis cassini* Picidae, *Pionites melanocephalus* Psittacidae, , *Isleria guttata* Thamnophilidae, *Herpsilochmus dorsimaculatus* Thamnophilidae, *Thamnophilus nigrocinereus* Thamnophilidae, *Percnostola subcristata* Thamnophilidae, *Gymnopithys rufigula* Thamnophilidae, *Neopelma chrysocephalum* Pipridae, *Pachyramphus*

*surinamus* Tityridae, *Perissocephalus tricolor* Cotingidae, *Todirostrum pictum* Rhynchocyclidae, *Conopias parvus* Tyrannidae, *Cyanocorax cayanus* Corvidae, *Microbates collaris* Poliptilidae, *Euphonia plumbea* Fringilidae. Bird species with restricted distributions include *Cercomacra carbonaria* Thamnophilidae, wich is endemics from Branco River, and *Myrmotherula klagesi* Thamnophilidae.

A new genus and two new species of rodents (*Zygodontomys* sp. and *Oecomys* sp. Cricetidae) are being described from surveys in the Viruá National Park, and the Red Brocket *Mazama cf. americana* registered in Viruá may also corresponds to a new taxon (ICMBio, 2014).

Among the amphibians, we highlight the occurrence of rare species of anuran *Asparaphenodon venezuelanus* Hylidae, previously recorded only in the Jau National Park in Campinarana habitats (ICMBio, 2014).

New fish species described from surveys in Viruá NP include the red-dotted armored catfish *Ancistrus maximus* Locariidae (Oliveira *et al*., 2015), a new species of spiny catfish *Spinipterus* sp. Auchenipteridae, and two new species of catfish *Phreatobius* sp. Incertae sedis (Jansen Zuanon personal communication).

**Criterion 7:** The Viruá National Park shelters an exceptional richness of freshwater fishes (500 species), equivalent to 66% of all known species for the Branco River basin (759 species) (Ferreira *et al*, 2007; ICMBio, 2014). This index is the highest ever recorded in Brazilian protected areas and demonstrates the important role of the Viruá National Park and Lower Branco River drainage system for the conservation of the Brazilian wetland biodiversity. At least eight species of fish recorded in Viruá NP are endemics from the Negro and Orinoco River basins: *Boulengerella lateristriga* Ctenoluciidae Characiformes, *Hydrolycus wallacei* Cynodontidae Characiformes, *Cichla orinocensis* Cichlidae Perciformes, *Hoplarchus psittacus* Cichlidae Perciformes, *Ageneiosus polystictus* Auchenipteridae Siluriformes, *Cetopsidium pemon* Cetopsidae Siluriformes, *Anduzedoras oxyrhynchus* Doradidae Siluriformes, *Ancistrus maximus* Locariidae Siluriformes (ICMBIO, 2014).

**Criterion 8:** The Viruá National Park provides significant habitats for feeding and reproduction of at least 500 species of fish, dozens of them with high commercial value (Cintra & Bezerra, 2002), supporting exceptionally high levels of fishing productivity for the regional standards (Lemos, 2009). Some of the most valuable species for commercial fishing are *Schizodon fasciatus* Anostomidae Characiformes, *Plagioscion squamosissimus* Sciaenidae Perciformes, *Arapaima gigas* Arapaimidae Osteoglossiformes, *Pseudoplatystoma tigrinum* Pimelodidae Siluriformes and *Pseudoplatystoma fasciatum* Pimelodidae Siluriformes. Another relevant species, mainly for sport fishing, are the Peacock Bass *Cichla temensis* Cichlidae Perciformes, the Vampire Tetra *Hydrolycus scomberoides* Cynodontidae Characiformes and the Redtail Catfish *Phractocephalus hemioliopterus* Pimelodidae Siluriformes. (ICMBio, 2014).

**15. Biogeography** (required when Criteria 1 and/or 3 and /or certain applications of Criterion 2 are applied to the designation):
*Name the relevant biogeographic region that includes the Ramsar site, and identify the biogeographic regionalisation system that has been applied.*

**a) biogeographic region:**

The Viruá National Park is inserted in the Ecological Region of Campinaranas, in the Guiana Shield endemism area.

**b) biogeographic regionalisation scheme** (include reference citation):

The Brazilian vegetation classification system of IBGE, 1992.
Areas of Endemism - Cracraft (1985)

**16. Physical features of the site:**

*Describe, as appropriate, the geology, geomorphology; origins - natural or artificial; hydrology; soil type; water quality; water depth, water permanence; fluctuations in water level; tidal variations; downstream area; general climate, etc.*

**Geology and Geomorphology**

The Viruá National Park is situated in a region with unique geological features in the Amazon, resulting from tectonic events (neotectonics) and geomorphological processes that have only recently begun to be investigated in detail. Much of the park consists of an unusual geological feature resulting from the deposition of alluvial sediments transported by fluvial channels, in a system called "megafan". Identified in 2010, this feature, called "Viruá megafan", is the first of its kind to be described in the Amazon region (Zani *et al.* 2012; Rossetti *et al.* 2012.). The dominant geological units in Viruá are the Içá Formation, and alluvial and aeolic deposits from the Holocene (Brasil, 1975).

**Hydrology**

The Viruá National Park is situated on the northern edge of the Northern Pantanal, a large marshy system dominated by sands in the extensive depression of the Lower Branco River/medium Negro River. The similarities of this system are numerous with the western sector of the Pantanal from Mato Grosso, where vast sandy alluvial fans and more humid conditions prevail, with periodic flooding, with the occurrence of Spodosols (Schaefer *et al.*, 2009). The hydrological dynamics of the region is developed in very flat and low landscape, with a predominance of heights between 40 and 55 m (Rossetti *et al.*, 2012), although geographically far away from the sea.

The hydrologic system of Viruá is controlled by four rivers with different characteristics: the Branco River, with a straight course and white to clear waters, on the west limit; the Baruana river that has a meandering course and white water, on its eastern limit; the Anauá river, of meandering course and white and black waters, in the southern limit; and the Iruá River, main river channel crossing the Viruá NP, with a straight course and black water. The Branco River has a decisive role in the intensity and duration of flood pulses in wetland areas of the Viruá National Park and much of the Northern Pantanal, having a direct relation between the flooded surface of the protected area and the flood level of this river (Schaefer *et al*, 2009; Zani *et al*, 2012). Tempory river channels and lakes predominate in the hydrographic network of Viruá. Perennial bodies of water are represented by marginal lakes and deep trenches of the Iruá River and tributaries, which play an important role as shelter for wildlife during the ebb.

**Pedology**

Predominate in the Viruá National Park the Hydromorphic Quartzarenic Neosols and Hydromorphic Humilúvicos Spodosols, poorly drained sandy soils developed under a large sedimentary plain, from quartz sands originated from the Içá Formation or *in situ* weathering of other substrates. Located at low altitudes (45 to 60m), they are subjected to periodic flooding by the rise of groundwater (controlled by the level of Baruana and Branco rivers) or by the accumulation of rainwater, whose flow is hindered by the presence at certain depth of cemented layers by iron oxides, aluminum oxides and organic matter. The sandy texture restricts the storage capacity of water in these soils, causing water deficits during the dry season, with the interruption of the flow of rivers in the Park (Schaefer *et al.*, 2009; Mendonça, 2011).

In addition to the physical constraints imposed by the seasonal cycle of shortage and excess of moisture, the soils are extremely poor chemically, acidic, dystrophic and have low fertility, fitting in class VIIIa, for the capability of use, i.e. soils are unsuitable for crop, pasture or reforestation, only serving for the preservation of fauna, flora and water resources (Vale-Júnior, 2008).

**Climate**

The Viruá National Park is inserted into the climate type Am (Tropical Monsoon) in the Köppen classification. The average annual temperature is 26 ºC, with maximum monthly temperature range of 5 °C (Brasil, 1975; Barbosa, 1997). Precipitation levels vary from 1700 to 2000 mm/year, with a well-

marked dry season. The rainiest months are May, June and July, which concentrate on the average 51% of total precipitated rainfall per year. In the driest months (December, January and February), the amount of rainfall is significantly reduced, corresponding, on the average, to 8% of the total annual rain (ICMBio, 2014).

This region is under moderate influence from the Equatorial continental air mass (mEc) and the Intertropical Convergence Zone (ZCIT), the main atmospheric agents that promote rainfall in the Amazon region (Nimer, 1989; Barbosa, 1997). Continental climatic anomalies, such as displacement of the ZCIT, and global climatic anomalies (El Niño and La Niña) have strong influence on rainfall in the region, causing marked inter-annual variations in annual and monthly rainfall (ICMBio, 2014).

**17. Physical features of the catchment area:**

*Describe the surface area, general geology and geomorphological features, general soil types, and climate (including climate type).*

The seasonal flooding regime of the Viruá National Park is controlled by the hydrologic regime of the Branco River (Zani *et al.*, 2012, Schaefer *et al.*, 2009). Installed in an ancient erosional surface, where geological formations of the Guyanese complex and Latossolos predominate, this river carries chemically poor and mature sediments (Ferreira *et al.*, 2007). Endowed with a catchment area of approximately 181,000 $km^2$, with approximately 152,300 $km^2$ upstream from the Viruá National Park, the Branco River controls the regional base level, imposing a flux barrier for its tributaries (ICMBio, 2014, Schaefer *et al.* 2009).

The variability in the flow of the Branco River is quite similar to the observed seasonality in rainfall in the basin under the dominance of the Aw and Am climates. The main difference is the anticipation of the rainfall throughout the series in one month. The rainy season begins in March, while the rise of flow begins in April. The peak of rainfall (or wettest month) occurs from May to June while the peak of discharge occurs between the months of June and July. The same is valid for the period of decrease in flow and rainfall. The end of the full flood recession occurs around October, beginning of ebb period. The average peak flow is approximately 7000 ± 2000 m3/s, and remains for about 20% of the year, between the months of June and August. In this period, the waterways and water bodies of Viruá reach the maximum quota, causing the flooding of large areas (Trancoso, 2006).

**18. Hydrological values:**

*Describe the functions and values of the wetland in groundwater recharge, flood control, sediment trapping, shoreline stabilization, etc.*

The Viruá National Park shelters a compound of wetlands that is a unique system in the Brazilian Amazon, promoting the protection and research of a wide variety of aquatic habitats and its megadiversity. On a larger view, the wetlands of the Brazilian Northern Pantanal, that include Viruá NP, play important roles on flood control, sediments depositional processes and biogeochemical cicles of the Lower Branco River and Demini River drainage systems. These processes influence not only the flooded forests and Campinaranas ecosystems dynamics in these river basins but also the dynamics of the largest Amazon fluvial island systems, the Mariuá and Anavilhanas archipelagos, in the Medium and Lower Negro River respectively (Zeidemann, 2001). Such essentials hydrogeological roles would be better described by long term research programs supported by protected areas and specialized research institutes.

**19. Wetland Types**

**a) presence:**

*Circle or underline the applicable codes for the wetland types of the Ramsar "Classification System for Wetland Type" present in the Ramsar site. Descriptions of each wetland type code are provided in Annex I of the Explanatory Notes & Guidelines.*

**Marine/coastal: A • B • C • D • E • F • G • H • I • J • K •Zk(a)**

**Inland: L • M • N • O • P • Q • R • Sp • Ss • Tp • Ts • U • Va •Vt • W • Xf • Xp • Y • Zg • Zk(b)**

**Human-made: 1 • 2 • 3 • 4 • 5 • 6 • 7 • 8 • 9 • Zk(c)**

**b) dominance:**

*List the wetland types identified in a) above in order of their dominance (by area) in the Ramsar site, starting with the wetland type with the largest area.*

| WETLAND TYPE | AREA (HA) | % PN VIRUA |
|---|---|---|
| *Xf -- Continental wetlands with dominant tree stratum; includes continental swamp forests, seasonally flooded forests and forested swamps on inorganic soils. | 102,030 | 47.11% |
| *W -- Wetlands with dominant shrub stratum, shrubby swamps, shallow wetlands and dominated by shrubs, deciduous shrub communities in the transition zone between herbaceous and tree communities in wetlands, deciduous shrub communities dominated by *Alnus rugosa* on inorganic soils. | 88,317.57 | 40.78% |
| Tp -- Permanently flooded continental areas; lakes smaller than 8 ha, wetlands and swamps inorganic soils; with emergent/floating vegetation during most of the growing season | 9,709.64 | 4.48% |
| *Ts -- Seasonal/intermittent continental wetland on inorganic soils; includes swamps, moist depressions, meadows, wetlands dominated by cyperaceans. | | |
| M -- Permanent rivers and streams; includes waterfalls. | 4,449.51 | 2.05% |
| N -- Seasonal/intermittent rivers and streams. | | |
| O -- Perennial continental lakes - larger than 8 ha; includes marginal lakes coming from oxbow lakes. | | |
| P -- Seasonal/intermittent continental lakes - larger than 8 ha; includes lakes on flood plains. | | |
| **TOTAL WETLANDS** | 204,506.72 | 94,43% |

| WETLAND TYPE | AREA (HA) |
|---|---|
| *Xf -- Continental wetlands with dominant tree stratum; includes continental swamp forests, seasonally flooded forests and forested swamps on inorganic soils. | 102,030 |
| **Bta** - Shoals and sandy terraces from Branco River with floodplain forests on hydromorphic soils. | 13,321.24 |
| **Paa** - Alluvial plain with floodplains forest on Neosols "Flúvicos" of the Anauá river. | 4,325.38 |
| **Tci** - Transition Forested Campinaranas/flooded Forest (igapó). | 27,299.12 |
| **Pit** - Floodplains and terraces with flooded forest (igapó) on sandy hydromorphic soils. | 43,425.86 |
| **Irb** - Flooded forest (Igapó) of the Barauana river with sandy-clayey hydromorphic soils | 234.78 |
| **Iri** - Flooded forest (Igapó) of the Iruá river with hydromorphic soils | 13,275.8 |
| **Aa** – Area with disturbed rainforest | 147.78 |

| | |
|---|---|
| *W -- Wetlands with dominant shrub stratum, shrubby swamps, shallow wetlands and dominated by shrubs: | 88,317.57 |
| **Mpa** - Mosaic low flooded sandy levels s with woody-and shrubby "Parque" and Campinarana<br>**Pap** - Sandy plains and paleodunes with grassy and shrubby Campinarana in Neosols Quartzarênicos and hydromorphic Spodosols<br>**Mfi** - Mosaico de Formações de Floresta de Igapó e Chavascais | 12,828.05<br>53,237.29<br>22,252.23 |
| Tp -- Permanently flooded continental areas; lakes smaller than 8 ha, wetlands and swamps on inorganic soils, with emergent/floating vegetation in most of the growing season;<br>*Ts -- Seasonal/intermittent continental wetland on inorganic soils; includes swamps, moist depressions, meadows, wetlands dominated by cyperaceans. | 9,709.64 |
| **Cab** - Sandy marshy fields with grassy Campinarana on Spodosols<br>**Vdc** - Valleys and depressions with swampy fields and semi-aquatic vegetation on sandy hydromorphic soils | 4,648.89<br>5,060.75 |
| M -- Permanent rivers and streams;<br>N -- Seasonal/intermittent rivers and streams;<br>O -- Perennial continental lakes - larger than 8 ha; includes marginal lakes coming from oxbow lakes;<br>P -- Seasonal/intermittent continental lakes - larger than 8 ha; includes lakes on flood plains: | 4,449.51 |
| **Vfb** - Valleys with riparian formations of "buritizais" in sandy organic Soils<br>Bodies of water | 3,301.75<br>1,147.76 |
| **TOTAL WETLANDS** | 204,506.72 |

The calculation of areas (ha) and their respective percentages in the Viruá National Park were obtained from the correspondence between the mapped geo-environments in the Viruá National Park and the wetland ecosystems described in the Ramsar Sheet, always assigning every possible geo-environment to a single class listed in the sheet. By restriction of the available vector files, we performed the grouping of Tp, Ts classes and the M, N, O, P classes to allow the identification of the corresponding ecosystems occupied by the NP of Viruá area. The source of geo-environmental data of the Viruá National Park is in Schaefer *et al.*, 2009.

**20. General ecological features:**

*Provide further description, as appropriate, of the main habitats, vegetation types, plant and animal communities present in the Ramsar site, and the ecosystem services of the site and the benefits derived from them.*

The Viruá National Park covers a broad marshy system dominated by sand, subjected to a seasonal flooding regime caused by the flooding large rivers (flood plains and flooded forest) and the upwelling of groundwater ("chavascais" and flooded fields). The landscape is marked by an environmental heterogeneity, with a variety of vegetation types associated with different conditions of landscape, hydrology, soils and topography. The Campinaranas (open vegetation on soggy sandy soils) and alluvial dense Ombrophylous forests, represent 45 % and 47 % respectively of the vegetation cover, having an abrupt contact with Pioneer Formations ("buritizais", marshy field) and open lowland rainforests. Open sub-mountain rainforests are present as small enclaves associated with residual hills. The floristic richness is quite high, due to the variation in species composition between different habitats in the protected area (diversity β) (ICMBio, 2014).

The Campinarana physiognomies are mainly found in sandy deposits of the "Viruá megafan", and have

a gradation in the size and density of species according to the level of water in the soils. Four main features are identified in the Viruá National Park: Forested Campinarana, scrubby Campinarana, Campinarana Park ("Parque") and grassy-woody Campinarana. The association between shrubby and termites species observed in Campinarana Park resembles the pattern described in savanna areas in the Pantanal of Mato Grosso, influencing the relatively regular spatial distribution of woody plants in the herbaceous matrix. The high frequency of representatives of the Vochysiaceae family in forested and shrub places is another feature that demonstrates ecological similarities between open systems of the Viruá National Park and Pantanal of Mato Grosso (ICMBio, 2014). The participation of these ecosystems in carbon sequestration is significant, through the storage of large amounts of organic carbon in soils (Spodosols "Humilúvicos") (Mendonça, 2011) and the expansion of forested and woody physiognomies, through a succession process (Gribel *et al*., 2009)

Ecological processes in the Viruá National Park are closely associated with large flood pulses of the Branco River and tributaries, which ensure moisture conditions and the supply of nutrients for the maintenance of forest and non-forest systems in almost 90% of the protected area. The seasonal flooding of forests and Campinaranas provide habitats and resources needed for feeding and reproduction of a large number of species, including 500 species of fish, nine species of aquatic turtles, five species of aquatic mammals, dozens of species of aquatic migratory birds, among others, ensuring the continuity of the life cycles of animals and plants in this wetland system (ICMBio, 2014).

**21. Noteworthy flora:**

*Provide additional information on particular species and why they are noteworthy (expanding as necessary on information provided in 14, Justification for the application of the Criteria) indicating, e.g., which species/communities are unique, rare, endangered or biogeographically important, etc. Do not include here taxonomic lists of species present – these may be supplied as supplementary information to the RIS.*

The Viruá National Park hosts a wide variety of vegetation types, which guarantees a high floristic richness for the protected area. The composition of species and families is quite different among the different vegetation types. Some families may be highlighted for its abundance in the Ombrophylous forests in the lowland, like Burseraceae, Fabaceae, Moraceae, Sapotaceae, Lauraceae, Annonaceae, Arecaceae, Chrysobalanaceae, Lecythidaceae and Apocynaceae, with plenty of palm trees like the "Bacaba" (*Oenocarpus bacaba*), "açaí-jussara" (*Euterpe precatoria*) and "inajá" (*Attalea maripa*) and the tree species *Licania heteromorpha var. heteromorpha*, *Qualea paraensis, Sclerolobium chrysophyllum*, *Trattinnickia burserifolia*, *Eschweilera atropetiolata*, *Protium apiculatum* and *Pseudolmedia cf . laevis*. In the sub-mountain open Ombrophylous forests, the Lauraceae, Burseraceae, Chrysobalanaceae, Annonaceae, Moraceae and Lecythidaceae families are frequent. The most common species are *Protium apiculatum*, *Ocotea cinerea, Licania heteromorpha, Licania apetala, Guatteria sp, Pseudolmedia laevis, Trattinnickia sp* and *Eschweilera atropetiolata* and the palm *Oenocarpus bacaba* with the presence of large trees of "castanha-do-Pará" (*Bertholletia excelsa*). In the permanently flooded forests Chrysobalanaceae, Sapotaceae, Annonaceae and Fabaceae families predominate. The species with the highest importance in these habitats are *Licania micrantha, Micropholis venulosa, Pouteria sp.* and *Duguetia uniflora*. In the floodplain forest species of highest importance in value are *Pterocarpus rohrii, Naucleopsis caloneura, Mouriri guianensis, Guatteria discolor, Swartzia schomburgkii var. guyanensis, Calyptranthes cuspidata, Pouteria elegans, Zygia juruana,* and *Heisteria laxiflora*, being the family Fabaceae the most relevant phyto-sociologicaly in these sites. Other important families are Annonaceae Moraceae , Sapotaceae and Melastomataceae ( Gribel *et al* ., 2009, ICMBio 2014).

One feature that stands out in the floristic composition of woody physiognomies of Campinaranas is the dominance in the tree extract of species of Vochysiaceae, especially *Ruizterania retusa* and *Vochysia cf. ferruginea*. In ecotones in the upland forests, other species of Campinaranas are important *Parahancornia amara, Duroia saccifera, Humiria balsamifera* and *Vochysia ferruginea*. Some species of the Amazonian rainforests are also common in the area, as *Calophyllum brasiliensis, Licania apetala, Guatteria discolor* and *Chaunochiton angustifolium*, with the presence of "itaúba" trees (*Mezilaurus itauba*) (Gribel *et al*., 2009).

In forested Campinaranas next to "igapós" (flooded Forest) the most frequent species are *Mouriri cf.*

*acutiflora, Mezilaurus sp., Ruizterania retusa, Elvasia calophylla, Xylopia sp., Couma utilis, Carapa guianensis* and *Ilex divaricata*. The most influential families in the floristic composition are Melastomataceae, Vochysiaceae, Annonaceae, Lauraceae and Ochnaceae. Abundant species in isolated clumps of forested Campinaranas are *Ruizterania retusa* (higher importance value), followed by *Licania heteromorpha*, *Sacoglottis guianensis*, *Ouratea spruceana, Ferdinandusa rudgeoidee* and *Caraipa cf llanorum* (Gribel *et al*., 2009).

The *Ruizterania retusa* (Vochysiaceae) seems to fulfill an important role in the succession dynamics of the campinaranas region, colonizing areas with sandy and soaked soils in more open areas (Campinarana shrub, Campinarana park and grassy-woody Campinarana), reaching high density and large size in campinaranas and mainly in forested areas of the ecotone (Gribel *et al*., 2009).

In the shrub extract of campinaranas, the Rubiaceae, Chrysobalanaceae, Humiriaceae, Clusiaceae, Melastomataceae families dominate, as do the species of *Platycarpum egleri, Pagamea coriacea, Euphronia guianensis, Ilex divaricata, Clusia nitida*, with the presence of the endemic palm *Barcella odora*. In grassy-woody physiognomies, palm *Bactris campestris* and other very thin and short plants such as *Licania lanceolata*, *Tibouchina* sp. and *Croton* sp. dominate the woody extract. In herbaceous covers, wetland species are found, with several representatives of the genera *Xyris* and *Abolboda* (Xyridaceae), *Paepalanthus* and *Syngonanthus* (Eriocaulaceae), *Utricularia* (Lentibulariaceae) and *Drosera* (Droseraceae), as well as pteridophytes like *Schizaea elegans* (Schizaeceae). In depressions where permanent ponds are formed, it is common to find a variety of aquatic macrophytes (Gribel *et al*., 2009, ICMBio 2014).

New species of flora described from surveys in the Viruá NP, potentially endemic of forest/campinaranas of the region include *Lockarthia viruensis* (Orchidaceae/alluvial and upland forest) (Pessoa & Alves, 2012), *Clusia nitida* (Clusiaceae - forested Campinarana and scrub) and *Vismia* sp. nov. (Hypericaceae - upland forest/campinarana ecotone) (Cabral, 2011, Bittrich *et al.,* 2013), *Isertia* sp. nov. (Rubiaceae - forested and scrub Campinarana), *Dracontium narae* (Araceae/upland forest) (Alves & Santos, 2015), *Otachyrium* sp. nov (Poaceae - grassy-woody Campinarana), *Drosera amazonica* (Droseraceae - grassy-woody Campinarana) (Rivadavia *et al*, 2009.).

**22. Noteworthy fauna:**

*Provide additional information on particular species and why they are noteworthy (expanding as necessary on information provided in 14. Justification for the application of the Criteria) indicating, e.g., which species/communities are unique, rare, endangered or biogeographically important, etc., including count data. Do not include here taxonomic lists of species present – these may be supplied as supplementary information to the RIS.*

In the mammal group, bats (46 spp.), rodents (20 spp.), carnivores (16 spp.), primates (9 spp.) and marsupials (9 spp.) are the orders with the highest number of species (Oliveira *et al.* 2009, ICMBio, 2014) (Appendix 2). Among the ungulates, the Tapir *Tapirus terrestris* stands out as a major species promoting plant species dispersal and succession in Viruá NP (Barcelos *et al*., 2013). The White-lip Peccary *Tayassu pecari* is present in large packs in forest systems, and the population of White-tailed Deer *Odocoileus aff. cariacou* (strictly associated to Amazonian open areas) is possibly the largest ever recorded in the southern limit of the species distribution (ICMBio, 2014). Among the five species of aquatic mammals recorded, the Giant Otter *Pteronura brasiliensis* and the Pink River Dolphin *Inia geoffrensis* are more common in the waterways of the protected area. The Manatee *Trichechus inunguis* was recorded from the beginning to the lower stretch of the Iruá River.

Studies about mammals in the Viruá National Park indicate the existence of a biogeographic unit in the Campinaranas of the Medium Negro River, covering the Lower Branco River (Roraima State) and the Jaú National Park region (Amazonas State), based on similarities in composition of bats species of both protected areas, as well as the karyotypes of rodent specimens *Zygodontomys* sp. Nov*,* collected in the Viruá National Park (ICMBio, 2014).

In relation to birds, the group comprises representatives from different biogeographic regions, in particular from the Guiana Shield, Campinaranas of the Negro River (see endemism in Criterion 2) and also from the Solimões-Amazonas system. Orders with the largest number of species are Passeriformes (283 spp.), Falconiformes (37 spp.), Piciformes (36 spp.), Apodiformes (27 spp.), Ciconiiformes (24 spp.), Psittaciformes (22 spp.), Charadriiformes (17 spp.) and Gruiformes (15 spp.) (Cohnhaft *et al.* 2009, ICMBIO, 2014) (Appendix 3). At least 37 species of migratory birds seek shelter and food resources in Viruá during part of the year, 12 of them depend on aquatic environments. During ebb (October-March), 22 migratory species from the north (boreal), especially Sandpipers (Scolopacidae Family, 8 species), "Mariquitas" (Parulidae, 5 species) and Swallows (Hirundinidae, 2 species) are sighted in the region. Southern migratory species (7 spp.) and from other regions of the Amazon (8 spp.) make use of the protected area during the rainy season (April-August) or other times.

Among the reptiles (71 spp.) and amphibians (47 spp.) recorded in the Viruá, the species with a preference for open habitats are the lizards *Anolis auratus, Cnemidophorus leminiscatus, Kentropyx striata* and the anurans *Rhinella granulosa, Leptodactylus cf. longirostris, Pseudopaludicola* sp.*, Scinax aff. garbei, Scinax fuscomarginatus, Hypsiboas crepitans* and *Hypsiboas* sp. (Gordo *et al.*, 2009, ICMBio, 2014) (Appendix 4). Species closely associated with forest environments include the lizard *Cercosaura ocellata* and the anurans *Phyllomedusa bicolor* and *Allophrine ruthveni*. The Viruá National Park plays an important role in the conservation of river turtle species, offering shelter for 10 of the 11 species recorded in Roraima, of which 6 are endangered in different levels (see Criterion 2), and two that are dependent on black water habitats, with restricted occurrence in the region: the Big-headed Amazon River Turtle *Peltocephalus dumerilianus* and the Red-headed Amazon River Turtle *Podocnemis erythrocephala* (Podocnemididae) (ICMBio, 2014).

The fish group in the Viruá National Park includes numerous species of commercial value (see Criterion 8), and other of special biogeographic importance in the context of the Branco River. Considered a basin with peculiar geographic and faunal characteristics, the basin of the Branco River is predominantly a system of clear/white water inserted in larger basin of black waters rivers in the Amazon (Goulding *et al.*, 1988). The basin of the Iruá River presents itself as a true ichthyofaunistic enclave, sustaining typical black water populations, in a place that is possibly the most northern portion of the fish fauna of the Rio Negro River in the Branco River basin (Ferreira *et al* , 2009, ICMBio, 2014) (Appendix 5).

**23. Social and cultural values:**

**a)** Describe if the site has any general social and/or cultural values e.g., fisheries production, forestry, religious importance, archaeological sites, social relations with the wetland, etc. Distinguish between historical/archaeological/religious significance and current socio-economic values:

The Viruá National Park has social values of significant importance in a local and regional level, related to income generation through the service delivery in the protected area, the dissemination of knowledge aiming the sustainable use of resources and the conservation of environments and species that are relevant to ecotourism and for the sustainable fishing. Management support services, in particular to prevent forest fires and research support, provided by the Viruá National Park generated R$ 1.4 million in liquid income for the local communities, counting the period from 2005 to 2012. Courses given in Viruá together with partner agencies (IBAMA - RR, RR - Embrapa, Sebrae - RR), aiming the sustainable use of resources and income based on a conserved biodiversity, include training guides for sport fishing (3 editions), Agroecology (1 edition), Botanical Identification (1 edition), Bird watching (1 edition) and other topics.

Cultural values are represented by the memory records of ancient extractive practices and terminologies used to describe places and landscapes on the National Park in the period in which

riverine populations inhabited the region (from the XIX century until the mid-80's). The vast knowledge produced on biodiversity and ecosystems is an asset of enormous value to the promotion of human development and sustainable use of natural resources, and the benefits go beyond the boundaries of the region.

**b)** Is the site considered of international importance for holding, in addition to relevant ecological values, examples of significant cultural values, whether material or non-material, linked to its origin, conservation and/or ecological functioning?

If Yes, tick the box ❑ and describe this importance under one or more of the following categories:

i) sites which provide a model of wetland wise use, demonstrating the application of traditional knowledge and methods of management and use that maintain the ecological character of the wetland:
ii) sites which have exceptional cultural traditions or records of former civilizations that have influenced the ecological character of the wetland:
iii) sites where the ecological character of the wetland depends on the interaction with local communities or indigenous peoples:
iv) sites where relevant non-material values such as sacred sites are present and their existence is strongly linked with the maintenance of the ecological character of the wetland:

**24. Land tenure/ownership:**
a) Within the Ramsar site:

The Viruá National Park area is entirely composed of public domain land, belonging to the Brazilian Federal Government.

b) in the surrounding area:

Neighboring the protected area there are 22 rural properties of a Colonization Project located along the BR-174 federal highway, two definitive land titles and about 14 occupations, with no overlap between the limits of the Park and other areas of public or private domain.

**25. Current land (including water) use:**

a) within the Ramsar site:

The Brazilian protected areas land use are regulated by federal laws, which establish high level of restriction for resource use inside National Parks and other PA categories. Inside the Viruá National Park, the uses allowed are the tourism, research and educational activities. Resource exploitation activities as fishering, foresting, mining or hunting are prohibited and prevented. By 2014, Viruá NP was the most researched National Park in the Brazilian Amazon, and the third one in the anual rate of tourist visits (ICMBio 2014).

b) in the surroundings/catchment:
Municipalities covering the Viruá National Park and surroundings (Caracaraí and Rorainópolis) have about 1/3 of its area under the form of federal protected areas and indigenous lands. These form an almost continuous strip of protected areas surrounding the southern portion of the state, a region with peculiar characteristics regarding access (only by river or air transport) and demographics (extractive riverine communities). The Viruá National Park is one of the conservation units under greater influence from the BR-174 federal highway and colonization projects installed along this road. The

types of pressure mainly include hunting and the risk of forest fires, the latter being one of the most serious threats to protected areas in the region.

**26. Factors (past, present or potential) adversely affecting the site's ecological character, including changes in land (including water) use and development projects:**
a) within the Ramsar site:

There are no proposals to be developed within the NP of Viruá that threaten the integrity of its physical and ecological characteristics.

b) in the surrounding area:

The main factor threatening the ecological processes in the Viruá National Park is the probable future installation of a hydroelectric power plant in the Branco River, upstream from the protected area. The low technical viability and reduced energetic benefit to be obtained, combined with the extreme importance of the environmental values in the region, may lead to a re-evaluation for energy alternatives for the basin.

**27. Conservation measures taken:**

**a)** List national and/or international category and legal status of protected areas, including boundary relationships with the Ramsar site:
*In particular, if the site is partly or wholly a World Heritage Site and/or a UNESCO Biosphere Reserve, please give the names of the site under these designations.*

The Viruá National Park is a protected area, subject to special arrangements for the protection and management of natural resources, legally governed by the Law 9985/2000 that establishes the National Conservation Units System, and Decree 4340/2002 that regulates it.

**b)** If appropriate, list the IUCN (1994) protected areas category/ies which apply to the site (tick the box or boxes as appropriate):

**Ia** ❑; Ib ❑; II ☒; III ❑; IV ❑; V ❑; VI ❑

**c)** Does an officially approved management plan exist; and is it being implemented?:

Yes. The Viruá NP Management Plan was published in 2014, and it is being implemented since then.

**d)** Describe any other current management practices:

Fire control
Fire management practices are implemented in the neighbouring of Viruá NP for preventing forest fires on the borders and inside the PA. Eighteen to twenty one firefighters living in the villages around the Park are annualy contracted to undertake fire control actions for five to six months, along the dry season. Vehicles, water pumps and specialized firefighting tools belonging to Viruá NP are mobilizen for fire spots control. Satellite imagering and helicopters help in monitoring and firefighting on remote areas. Notifying landowners for taking preventive actions against forest fires is also a relevant strategy adopted by the federal environmental agency.

Biodiversity monitoring
Monitoring of target species of flora and fauna is being implemented in Viruá NP since 2006. More than 20.000 thousand tree species individuals were identified, and have their growth rate monitored by

a long term research on carbon cicle in Brasilian Amazon forest ecosystems (Porter *et al.* 2015). Monitoring of mammals, birds and butterflies are being conducted as part of a national effort of ICMBio in detecting climatic change impacts on the Brazilian biodiversity (Costa-Pereira *et al.* 2013).

Community-based ecotourism development
Local community involvement in ecotourism activities is being stimulated by many projects of Viruá NP, focused on social organization and capabilities development. Ecotourism facilities made with local materials is being installed in relevant areas for birdwatching and other activities, as part of the management plan implementation.

Amazon River Turtle hunting control
Viruá NP is one of the major partner on a multiagencies iniciative for the Amazon River Turtle hunting control, wich takes place in Roraima State since 2005. Monitoring of Amazon River Turtle breeding areas in the Branco River and its tributaries reduce the impact of hunting for illegal trade (Lisboa & Ribeiro 2014). In 2015, more than one thousand of adult individuals of Amazon River Turtle were rescued by monitoring activities supported by Viruá NP.

**28. Conservation measures proposed but not yet implemented:**
*e.g. management plan in preparation; official proposal as a legally protected area, etc.*

The most important conservation measure proposed for the Viruá National Park pending application since 2007 is expansion of the boundaries of the protected area, in order to incorporate areas of strategic importance for the conservation of water resources, protection of fauna and vegetation cover, and the effective development of tourism.

**29. Current scientific research and facilities:**
*e.g., details of current research projects, including biodiversity monitoring; existence of a field research station, etc.*

The research activities are of great importance in the management of Viruá National Park. They were initiated in 2006, by two important initiatives aiming to characterize the biodiversity and the ecosystems of the protected area: the "Program for Research on Biodiversity" - PPBio, coordinated by National Institute of Amazonian Research (INPA) and the "Environmental Assessment for the Management Plan", coordinated by ICMBio. The researches about the Viruá National Park provided baselines on biodiversity and geo-ecology of Campinaranas of Roraima, and point out unique features regarding the region's strategic value for the conservation and sustainable use of biodiversity in the Brazilian Amazon wetlands.

As one of the most accessible protect area in the Northern Pantanal, the Viruá National Park has played an important role in organizing, supporting and guiding research teams towards the production of knowledge needed for the proper management of the region, which includes the identification of resources and ecological processes to protect, biodiversity information and support tools (data, protocol) for managers and users of the area.

The managing strategies and efforts adopted have enabled the consolidation of the Park as a center for research in the Brazilian Amazon, making it one of the 20 most researched protectec areas in the country. Since 2008, the Viruá National Park is the top ranked in relation to researches, with a total of 106 permits issued from 2007 to August of 2012. The constant and high growth on average of 22 new authorizations each year, is a result of a network of partnerships, logistic facilities and expertise provided by programs and lines of research developed with the support and participation of the Park managers.

The Viruá National Park has a basic infrastructure to support administration, composed of buildings in

masonry and timber structures, which form the core of its Headquarters. The Center-Headquarters is installed in an area of primary forest in the foothills of the "Serra do Viruá". It is easily accessible from the BR-174 highway, and heavily used for research purposes, community integration and protection. One head office, a functional home and a building structure with two floors providing 4 bedrooms (for employees), one hammock area (for users), 4 toilets, 1 kitchen, 1 office, 2 multipurpose rooms and a balcony area, totalize 256.14 $m^2$ (ICMBio, 2014).

An important structure for supporting research is the trail system of PPBio, 60 km long. Comprised of 12 trails 5 km long and 1m wide, it provides access to a variety of environments by hiking in circuits with variable duration, near the Headquarters of the Viruá NP. Permanent research plots are installed in 30 points, accessible by guided trails in the East-West direction. These consist of marked paths of 250m on the curve of the field level, for which data on fertility and soil texture are made available, as structure and composition of vegetation where the samplings are performed. A rustic camp, with artesian well supports for overnight users that access remote parts of the system (ICMBio, 2014).

**30. Current communications, education and public awareness (CEPA) activities related to or benefiting the site:**

Communication actions are a strategic component in the management of the Viruá National Park. Initiated in 2005, these actions have enabled the dissemination of values and potentialities of the Park, for the local and national public, mainly through the partnerships with news teams from the press and TV. The ease of access, the richness of wildlife and the potential for research and ecotourism activities, make the Viruá National Park a special place for the dissemination of the Amazonian wetlands biodiversity information, and the role of the Park as a space for knowledge production, human development and conservation, core subjects of the articles being published (ICMBio, 2014).

One of the most striking features of the Viruá National Park is its potential for environmental integration, due to the proximity of several settlements, the terrestrial access; the facilities provided for educational and research activities, and the objectives of recreation and ecotourism. Integration activities of the protected area are directed to three main groups: fishers, farmers and students, which comprise much of the population living around the Park. Courses, cultural events and educational visits have been conducted since 2004, with the support of key partners such as IBAMA-RR, Sebrae-RR, Embrapa-RR, INPA, universities, public schools and artistic association of Caracaraí, seeking to unite social demands and the management of fishing resources, dissemination of sustainable practices in agriculture, learning experiences through the contact with nature and appreciation of the culture. These initiatives resulted in the formation of well-established institutional bond with a diverse set of public and representatives of the civil society, contributing to the formation of a representative advisory board of social interests associated with the managing of the Viruá National Park (ICMBio, 2014).

**31. Current recreation and tourism:**

*State if the wetland is used for recreation/tourism; indicate type(s) and their frequency/intensity.*

The Viruá National Park has its own geographical and ecological attributes that confer its special vocation for visitation and ecotourism in the Brazilian Amazon. Situated in the center-south of the Roraima State, on BR-174 highway (Manaus-Venezuela), it is the gateway to Northern Pantanal of Roraima, a region of unique features in the Amazon, highlighted by the megadiversity of flora and fauna (with the highest levels of biodiversity recorded in Brazilian protected areas), the extensive mosaic of Campinaranas and Forests, and the variety of aquatic environments with exceptional species richness. The easy access by the highway, plus the huge diversity of attractions and resources, make the Viruá National Park a strategic place for the development of tourism in Roraima, with potential to perform social and economic functions of great importance in the State.

Counting with basic facilities for functional support, and a system of over 60Km of trails for research purposes, the Viruá National Park has been providing opportunities for visitation and tourism, and especially education and research, to a very diverse public, from different regions of the country and even the world. From 2009 to 2012, the frequency of visitation was of 2044 visits per year. With the Park structuring for ecotourism, this number may reach values greater than 15,000 visits/year.

The consolidation of the Viruá National Park as important center for ecotourism in the Amazon, like other experiences in protected areas in Peru and Ecuador, presents itself as an important path to sustainable local development, through the structuring of a diverse and well qualified network of services, to attend a national and global growth in the demand for ecotourism. The variety and quality of resources enable the achievement of a large number of recreational and interpretive activities. With the internal management of the sectors (through structures and rules), its attractions should provide a fairly diverse set of opportunities for visitors to experience.

**32. Jurisdiction:**
*Include territorial, e.g. state/region, and functional/sectoral, e.g. Dept of Agriculture/Dept. of Environment, etc.*

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**33. Management authority:**
*Provide the name and address of the local office(s) of the agency(ies) or organisation(s) directly responsible for managing the wetland. Wherever possible provide also the title and/or name of the person or persons in this office with responsibility for the wetland.*

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**34. Bibliographical references:**
*Scientific/technical references only. If biogeographic regionalisation scheme applied (see 15 above), list full reference citation for the scheme.*

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# APPENDICES

## APPENDIX 1

Guiana Shield endemics plant species recorded in Virua National Park.

* Species endemics from Campinarana Ecological Region.

[V] Species recorded only in Viruá NP.

| SPECIES | FAMILY | HABITAT | FIRST RECORD |
|---|---|---|---|
| *Piper goeldii** | Piperaceae | Campinarana | Silva 2013 |
| *Catasetum longifolium* | Orchidaceae | Campinarana | Pessoa 2013 |
| *Duckeella pauciflora** | Orchidaceae | Campinarana | Costa 2012 |
| *Lockhartia viruensis**[V] | Orchidaceae | Flooded forest, Lowland florest | Pessoa 2013 |
| *Nohawilliamsia pirarensis* | Orchidaceae | Campinarana | Pessoa 2013 |
| *Quekettia microscópica* | Orchidaceae | Flooded forest | Pessoa 2013 |
| *Sarcoglottis amazônica* | Orchidaceae | Flooded forest | Pessoa 2013 |
| *Trichocentrum recurvum* | Orchidaceae | Flooded forest, Lowland florest | Pessoa 2013 |
| *Vanilla appendiculata* | Orchidaceae | Flooded forest, Lowland florest | Pessoa 2013 |
| *Xyris cryptantha** | Xyridaceae | Campinarana | Costa 2012 |
| *Xyris dilatatiscapa* | Xyridaceae | Campinarana | Costa 2012 |
| *Xyris guianensis* | Xyridaceae | Campinarana | Mota 2014 |
| *Xyris involucrata* | Xyridaceae | Campinarana | Mota 2014 |
| *Xyris mima* | Xyridaceae | Campinarana | Costa 2012 |
| *Xyris subglabrata** | Xyridaceae | Campinarana | Costa 2012 |
| *Xyris subuniflora* | Xyridaceae | Campinarana | Costa 2012 |
| *Xyris surinamensis* | Xyridaceae | Campinarana | Costa 2012 |
| *Xyris uleana var. angustifolia* | Xyridaceae | Campinarana | Mota 2014 |
| *Xyris* sp1. | Xyridaceae | Campinarana | Mota 2014 |
| *Exellodendron coriaceum* | Chrysobalanaceae | Flooded forest, Campinarana | Gribel *et al.* 2009 |
| *Hirtella dorvalii** | Chrysobalanaceae | Campinarana | Pereira 2013 |
| *Hirtella paniculata* | Chrysobalanaceae | Campinarana | Pereira 2013 |
| *Hirtella pimichina** | Chrysobalanaceae | Campinarana | Pereira 2013 |
| *Hirtella ulei* | Chrysobalanaceae | Flooded florest, Campinarana | Pereira 2013 |
| *Licania coriacea* | Chrysobalanaceae | Flooded forest | Gribel *et al.* 2009 |
| *Licania lanceolata** | Chrysobalanaceae | Campinarana | Gribel *et al.* 2009 |
| *Licania stewardii** | Chrysobalanaceae | Campinarana | Pereira 2013 |
| *Clusia lopezii** | Clusiaceae | Campinarana | Cabral 2011 |
| *Clusia nitida** | Clusiaceae | Campinarana | Cabral 2011 |
| *Vismia* sp. nov.*[V] | Hypericaceae | Lowland forest, Campinarana | Cabral 2011 |
| *Comolia microphylla* | Melastomataceae | Campinarana | Cangani 2012 |
| *Henriettea horridula* | Melastomataceae | Campinarana | Cangani 2012 |
| *Henriettea martiusii** | Melastomataceae | Flooded florest | Gribel *et al.* 2009 |

| SPECIES | FAMILY | HABITAT | FIRST RECORD |
|---|---|---|---|
| *Macairea lasiophylla* | Melastomataceae | Campinarana | Cangani 2012 |
| *Pachyloma coriaceum* | Melastomataceae | Campinarana | Cangani 2012 |
| *Pachyloma huberioides** | Melastomataceae | Campinarana | Cangani 2012 |
| *Siphanthera cowanii** | Melastomataceae | Campinarana | Cangani 2012 |
| *Lecythis corrugata Poit. subsp. rosea** | Lecythidaceae | Lowland florest | Azambuja 2012 |
| *Lecythis* sp. nov.* [v] | Lecythidaceae | Lowland florest | Azambuja 2012 |
| *Ferdinandusa schultesii** | Rubiaceae | Campinarana | Cardozo 2011 |
| *Isertia parviflora* | Rubiaceae | Campinarana, Lowland florest | Cardozo 2011 |
| *Isertia* sp. nov* [v] | Rubiaceae | Campinarana | Cardozo 2011 |
| *Morinda* cf. *aurantiaca** | Rubiaceae | Campinarana, Lowland florest | Cardozo 2011 |
| *Platycarpum egleri** | Rubiaceae | Campinarana | Gribel *et al.* 2009 |
| *Platycarpum froesii** | Rubiaceae | Campinarana | Cardozo 2011 |
| *Psychotria blakei** | Rubiaceae | Campinarana | Cardozo 2011 |
| *Psychotria cardiomorpha* | Rubiaceae | Campinarana | Cardozo 2011 |
| *Retiniphyllum discolor** | Rubiaceae | Campinarana | Cardozo 2011 |
| *Sabicea brachycalyx* | Rubiaceae | Campinarana | Cardozo 2011 |
| *Utricularia chiribiquetensis** | Lentibulariaceae | Campinarana | Costa 2012 |
| *Utricularia longeciliata* | Lentibulariaceae | Campinarana | Costa 2012 |
| *Utricularia sandwithii** | Lentibulariaceae | Campinarana | Costa 2012 |

## APPENDIX 2

Mammals' species recorded in Viruá National Park.

| SPECIES | VERNACULAR NAME | FAMILY | FIRST RECORD |
|---|---|---|---|
| DIDELPHIMORPHIA | | | |
| *Caluromys lanatus* | Brown-eared Woolly Opossum | Didelphidae | Oliveira *et al.* 2009 |
| *Didelphis marsupialis* | Common Opossum, Black-eared Opossum | Didelphidae | Oliveira *et al.* 2009 |
| *Gracilinanus emiliae* | Emilia's Gracile Mouse | Didelphidae | Oliveira *et al.* 2009 |
| *Marmosa murina* | Linnaeus's Mouse Opossum, Murine Mouse Opossum | Didelphidae | Oliveira *et al.* 2009 |
| *Marmosops parvidens* | Delicate Slender Mouse | Didelphidae | Oliveira *et al.* 2009 |
| *Metachirus nudicaudatus* | Brown Four-eyed Opossum | Didelphidae | Oliveira *et al.* 2009 |
| *Micoureus demerarae* | Long-furred Woolly Mouse Opossum, Woolly Mouse Opossum | Didelphidae | Oliveira *et al.* 2009 |
| *Monodelphis brevicaudata* | Northern Red-sided Opossum | Didelphidae | Oliveira *et al.* 2009 |
| *Philander opossum* | Gray Four-eyed Opossum | Didelphidae | Oliveira *et al.* 2009 |
| SIRENIA | | | |
| *Trichechus inunguis* | Amazonian Manatee, South American Manatee | Trichechidae | Oliveira *et al.* 2009 |
| CINGULATA | | | |
| *Cabassous unicinctus* | Southern Naked-Tailed Armadillo | Dasypodidae | Oliveira *et al.* 2009 |
| *Dasypus kappleri* | Greater Long-nosed Armadillo | Dasypodidae | Oliveira *et al.* 2009 |
| *Dasypus novemcinctus* | Common Long-nosed Armadillo, Nine-banded Armadillo | Dasypodidae | Oliveira *et al.* 2009 |
| *Priodontes maximus* | Giant Armadillo | Dasypodidae | Keller *et al.* 2008 |
| PILOSA | | | |
| *Bradypus tridactylus* | Pale-throated Sloth, Pale-throated Three-toed Sloth | Bradypodidae | Oliveira *et al.* 2009 |
| *Choloepus didactylus* | Linnaeus's Two-toed Sloth, Southern Two-toed Sloth | Megalonychidae | Oliveira *et al.* 2009 |
| VERMILINGUA | | | |
| *Cyclopes didactylus* | Pygmy Anteater, Silky Anteater | Cyclopedidae | Oliveira *et al.* 2009 |
| *Myrmecophaga tridactyla* | Giant Anteater | Myrmecophagidae | Oliveira *et al.* 2009 |
| *Tamandua tetradactyla* | Collared Anteater, Tamandua, Lesser Anteater | Myrmecophagidae | Oliveira *et al.* 2009 |
| PRIMATES | | | |
| *Cebus apella* | Black-capped Capuchin, Guianan Brown Capuchin | Cebidae | Cordeiro 2008 |
| *Saguinus midas* | Golden-handed Tamarin, Midas Tamarin | Cebidae | Cordeiro 2008 |
| *Saimiri sciureus* | Common Squirrel Monkey, South American Squirrel Monkey | Cebidae | Cordeiro 2008 |
| *Alouatta macconnelli* | Guianan Red Howler Monkey | Atelidae | Cordeiro 2008 |
| | | | |

| SPECIES | VERNACULAR NAME | FAMILY | FIRST RECORD |
|---|---|---|---|
| *Ateles paniscus* | Guiana Spider Monkey, Red-faced Black Spider Monkey | Atelidae | Cordeiro 2008 |
| *Aotus trivirgatus* | Northern Night Monkey, Three-striped Gray Night Monkey | Aotidae | Oliveira *et al.* 2009 |
| *Callicebus lugens* | Black Titi, Collared Titi Monkey | Pitheciidae | Keller *et al.* 2008 |
| *Chiropotes chiropotes* | Bearded Saki, Capuchinos Del Orinoco | Pitheciidae | Cordeiro 2008 |
| *Pithecia pithecia* | White-faced Saki | Pitheciidae | Cordeiro 2008 |
| RODENTIA | | | |
| *Guerlinguetus aestuans* | Guianan Squirrel, Quatipuru | Sciuridae | Oliveira *et al.* 2009 |
| *Urosciurus igniventris* | Northern Amazon Red Squirrel | Sciuridae | Oliveira *et al.* 2009 |
| *Holochilus sciureus* | Marsh Rat | Cricetidae | Oliveira *et al.* 2009 |
| *Hylaeamys megacephalus* | Large-headed Rice Rat | Cricetidae | Oliveira *et al.* 2009 |
| *Neacomys guianae* | Guiana Bristly Mouse | Cricetidae | Oliveira *et al.* 2009 |
| *Nectomys rattus* | Small-footed Bristly Mouse | Cricetidae | Oliveira *et al.* 2009 |
| *Oecomys* sp1. | | Cricetidae | Oliveira *et al.* 2009 |
| *Oecomys* sp2. | | Cricetidae | Oliveira *et al.* 2009 |
| *Oligoryzomys* sp. | | Cricetidae | Oliveira *et al.* 2009 |
| *Zygodontomys* sp. | | Cricetidae | Oliveira *et al.* 2009 |
| *Dactylomys dactylinus* | Amazon Bamboo Rat | Echimyidae | Oliveira *et al.* 2009 |
| *Makalata didelphoides* | Brazilian Spiny Tree Rat | Echimyidae | Oliveira *et al.* 2009 |
| *Mesomys hispidus* | Spiny Tree Rat | Echimyidae | Oliveira *et al.* 2009 |
| *Proechimys* sp.1*; grupo guyannensis* | | Echimyidae | Oliveira *et al.* 2009 |
| *Proechimys* sp.2*; grupo goeldii* | | Echimyidae | Oliveira *et al.* 2009 |
| *Coendou prehensilis* | Brazilian Porcupine | Erethizontidae | Oliveira *et al.* 2009 |
| *Hydrochoerus hydrochaeris* | Capybara | Caviidae | Oliveira *et al.* 2009 |
| *Dasyprocta leporina* | Red-rumped Agouti, Brazilian Agouti | Dasyproctidae | Oliveira *et al.* 2009 |
| *Myoprocta acouchy* | Red Acouchi | Dasyproctidae | Keller *et al.* 2008 |
| *Cuniculus paca* | Spotted Paca | Cuniculidae | Oliveira *et al.* 2009 |
| LAGOMORPHA | | | |
| *Sylvilagus brasiliensis* | Forest Rabbit, Tapeti | Leporidae | Oliveira *et al.* 2009 |
| CHIROPTERA | | | |
| *Diclidurus isabellus* | Isabelle's Ghost Bat, Pale-brown Ghost Bat | Emballonuridae | Oliveira *et al.* 2009 |
| *Rhynchonycteris naso* | Proboscis Bat | Emballonuridae | Oliveira *et al.* 2009 |
| *Saccopteryx bilineata* | Greater Sac-winged Bat | Emballonuridae | Oliveira *et al.* 2009 |
| *Saccopteryx leptura* | Lesser Sac-winged Bat | Emballonuridae | Oliveira *et al.* 2009 |
| *Artibeus (Dermanura)* spp. | | Phyllostomidae | Bobrowiec 2010 |
| *Artibeus amplus* | Large Fruit-eating Bat | Phyllostomidae | Oliveira *et al.* 2009 |
| *Artibeus cinereus* | Gervais's Fruit-eating Bat | Phyllostomidae | Oliveira *et al.* 2009 |
| *Artibeus concolor* | Brown Fruit-eating Bat | Phyllostomidae | Oliveira *et al.* 2009 |
| *Artibeus gnomus* | Dwarf Fruit-eating Bat | Phyllostomidae | Oliveira *et al.* 2009 |
| *Artibeus lituratus* | Great Fruit-eating Bat | Phyllostomidae | Oliveira *et al.* 2009 |

| SPECIES | VERNACULAR NAME | FAMILY | FIRST RECORD |
|---|---|---|---|
| *Artibeus obscurus* | Dark Fruit-eating Bat | Phyllostomidae | Oliveira *et al.* 2009 |
| *Artibeus planirostris* | Flat-faced Fruit-eating Bat | Phyllostomidae | Oliveira *et al.* 2009 |
| *Carollia brevicauda* | Silky Short-tailed Bat | Phyllostomidae | Oliveira *et al.* 2009 |
| *Carollia perspicillata* | Seba's Short-tailed Bat | Phyllostomidae | Oliveira *et al.* 2009 |
| *Chrotopterus auritus* | Big-eared Wooly Bat, Peter's Woolly False Vampire Bat | Phyllostomidae | Oliveira *et al.* 2009 |
| *Desmodus rotundus* | Common Vampire Bat | Phyllostomidae | Oliveira *et al.* 2009 |
| *Glossophaga soricina* | Pallas's Long-tongued Bat | Phyllostomidae | Oliveira *et al.* 2009 |
| *Glyphonycteris daviesi* | Davies's Big-eared Bat, Graybeard Bat | Phyllostomidae | Oliveira *et al.* 2009 |
| *Lophostoma brasiliense* | Pygmy Round-eared Bat | Phyllostomidae | Oliveira *et al.* 2009 |
| *Lophostoma silvicolum* | White-throated Round-eared Bat | Phyllostomidae | Oliveira *et al.* 2009 |
| *Macrophyllum macrophyllum* | Long-legged Bat | Phyllostomidae | Oliveira *et al.* 2009 |
| *Mesophylla macconnelli* | Macconnell's Bat | Phyllostomidae | Oliveira *et al.* 2009 |
| *Micronycteris megalotis* | Little Big-eared Bat | Phyllostomidae | Bobrowiec 2010 |
| *Micronycteris microtis* | Common Big-eared Bat | Phyllostomidae | Bobrowiec 2010 |
| *Mimon crenulatum* | Striped Hairy-nosed Bat | Phyllostomidae | Oliveira *et al.* 2009 |
| *Phylloderma stenops* | Paled-faced Bat | Phyllostomidae | Oliveira *et al.* 2009 |
| *Phyllostomus discolor* | Pale Spear-nosed Bat | Phyllostomidae | Oliveira *et al.* 2009 |
| *Phyllostomus elongatus* | Lesser Spear-nosed Bat | Phyllostomidae | Oliveira *et al.* 2009 |
| *Phyllostomus hastatus* | Greater Spear-nosed Bat | Phyllostomidae | Oliveira *et al.* 2009 |
| *Platyrrhinus brachycephalus* | Short-headed Broad-nosed Bat | Phyllostomidae | Oliveira *et al.* 2009 |
| *Platyrrhinus helleri* | Heller's Broad-nosed Bat | Phyllostomidae | Bobrowiec 2010 |
| *Rhinophylla pumilio* | Dwarf Little Fruit Bat | Phyllostomidae | Oliveira *et al.* 2009 |
| *Sturnira lilium* | Little Yellow-shouldered Bat | Phyllostomidae | Oliveira *et al.* 2009 |
| *Tonatia saurophila* | Stripe-headed Round-eared Bat | Phyllostomidae | Oliveira *et al.* 2009 |
| *Trachops cirrhosus* | Fringe-lipped Bat | Phyllostomidae | Oliveira *et al.* 2009 |
| *Uroderma bilobatum* | Tent-making Bat | Phyllostomidae | Oliveira *et al.* 2009 |
| *Uroderma magnirostrum* | Brown Tent-making Bat | Phyllostomidae | Oliveira *et al.* 2009 |
| *Vampyressa bidens* | Bedentate Yellow-eared Bat | Phyllostomidae | Oliveira *et al.* 2009 |
| *Noctilio albiventris* | Lesser Bulldog Bat | Noctilionidae | Oliveira *et al.* 2009 |
| *Thyroptera tricolor* | Spix's Disk-winged Bat | Thyropteridae | Bobrowiec 2010 |
| *Cynomops planirostris* | Southern Dog-faced Bat | Molossidae | Oliveira *et al.* 2009 |
| *Molossus molossus* | Pallas's Mastiff Bat | Molossidae | Oliveira *et al.* 2009 |
| *Nyctinomops laticaudatus* | Broad-eared Bat, Broad-eared Free-tailed Bat | Molossidae | Oliveira *et al.* 2009 |
| *Lasiurus ega* | Southern Yellow Bat | Vespertilionidae | Oliveira *et al.* 2009 |
| *Myotis nigricans* | Black Myotis | Vespertilionidae | Oliveira *et al.* 2009 |
| *Myotis* sp. | | Vespertilionidae | Bobrowiec 2010 |
| CARNIVORA | | | |
| *Herpailurus yagouaroundi* | Eyra Cat, Jaguarundi | Felidae | Oliveira *et al.* 2009 |
| *Leopardus pardalis* | Ocelot | Felidae | Oliveira *et al.* 2009 |
| *Leopardus wiedii* | Margay, Tree Ocelot | Felidae | Oliveira *et al.* 2009 |
| *Panthera onca* | Jaguar | Felidae | Oliveira *et al.* 2009 |

| SPECIES | VERNACULAR NAME | FAMILY | FIRST RECORD |
|---|---|---|---|
| *Puma concolor* | Cougar, Mountain Lion, Puma | Felidae | Oliveira *et al.* 2009 |
| *Cerdocyon thous* | Common Zorro, Crab-eating Fox | Canidae | Oliveira *et al.* 2009 |
| *Speothos venaticus* | Bush Dog, Savannah Dog, Vinegar Dog | Canidae | Oliveira *et al.* 2009 |
| *Eira barbara* | Greyheaded Tayra, Tayra | Mustelidae | Oliveira *et al.* 2009 |
| *Galictis vittata* | Greater Grison | Mustelidae | Oliveira *et al.* 2009 |
| *Lontra longicaudis* | Long-tailed Otter, Neotropical Otter | Mustelidae | Oliveira *et al.* 2009 |
| *Pteronura brasiliensis* | Giant Brazilian Otter, Giant Otter | Mustelidae | Oliveira *et al.* 2009 |
| *Bassaricyon* cf. *beddardi* | Beddard's Olingo | Procyonidae | Oliveira *et al.* 2009 |
| *Nasua nasua* | South American Coati | Procyonidae | Oliveira *et al.* 2009 |
| *Potos flavus* | Kinkajou | Procyonidae | Oliveira *et al.* 2009 |
| *Procyon cancrivorus* | Crab-eating Raccoon | Procyonidae | Oliveira *et al.* 2009 |
| PERISSODACTYLA | | | |
| *Tapirus terrestris* | Brazilian Tapir, Lowland Tapir | Tapiridae | Oliveira *et al.* 2009 |
| ARTIODACTYLA | | | |
| *Pecari tajacu* | Collared Peccary | Tayassuidae | Oliveira *et al.* 2009 |
| *Tayassu pecari* | White-lipped Peccary | Tayassuidae | Oliveira *et al.* 2009 |
| *Mazama* cf. *americana* | Red Brocket | Cervidae | Oliveira *et al.* 2009 |
| *Mazama* cf. *nemorivaga* | Amazonian Brown Brocket, Small Brown Brocket Deer | Cervidae | Oliveira *et al.* 2009 |
| *Odocoileus cariacou* | White-tailed Deer, Key Deer | Cervidae | Oliveira *et al.* 2009 |
| CETACEA | | | |
| *Sotalia fluviatilis* | Tucuxi, Guianian River Dolphin, Gray Dolphin | Delphinidae | Oliveira *et al.* 2009 |
| *Inia geoffrensis* | Boto, Pink River Dolphin | Iniidae | Oliveira *et al.* 2009 |

## APPENDIX 3

Bird species recorded in Viruá National Park

| SPECIES | VERNACULAR NAME | FIRST RECORD |
|---|---|---|
| TINAMIFORMES | | |
| TINAMIDAE | | |
| *Tinamus major* | Great Tinamou | Naka e M.Barnett 2001 |
| *Crypturellus cinereus* | Cinereous Tinamou | Cohn-Haft *et al.* 2001 |
| *Crypturellus soui* | Little Tinamou | Cohn-Haft *et al.* 2001 |
| *Crypturellus undulatus* | Undulated Tinamou | Naka e M.Barnett 2001 |
| *Crypturellus erythropus* | Red-legged Tinamou | Cohn-Haft *et al.* 2001 |
| *Crypturellus variegatus* | Variegated Tinamou | Naka e M.Barnett 2001 |
| ANSERIFORMES | | |
| ANATIDAE | | |
| *Dendrocygna viduata* | White-faced Whistling Duck | Cohn-Haft *et al.* 2009 |
| *Dendrocygna autumnalis* | Black-bellied Whistling Duck | Silveira *et al.* 2007 |
| *Neochen jubata* | Orinoco Goose | Cohn-Haft *et al.* 2009 |
| *Cairina moschata* | Muscovy Duck | Cohn-Haft *et al.* 2001 |
| *Anas discors* | Blue-winged Teal | Laranjeiras *et al.* 2014 |
| GALLIFORMES | | |
| CRACIDAE | | |
| *Penelope marail* | Marail Guan | Naka e M.Barnett 2001 |
| *Penelope jacquacu* | Spix's Guan | Cohn-Haft *et al.* 2009 |
| *Aburria cumanensis*[1] | Blue-throated Piping Guan | Naka e M.Barnett 2001 |
| *Ortalis motmot* | Little Chachalaca | Cohn-Haft *et al.* 2009 |
| *Crax alector* | Black Curassow | Czaban 2005 |
| *Pauxi tomentosa*[2] | Crestless Curassow | Naka e M.Barnett 2001 |
| ODONTOPHORIDAE | | |
| *Colinus cristatus* | Crested Bobwhite | Cohn-Haft *et al.* 2001 |
| *Odontophorus gujanensis* | Marbled Wood-quail | Cohn-Haft *et al.* 2009 |
| PODICIPEDIFORMES | | |
| PODICIPEDIDAE | | |
| *Tachybaptus dominicus* | Least Grebe | Gutierrez *et al.* 2009 |
| CICONIIFORMES | | |
| CICONIIDAE | | |
| *Ciconia maguari* | Maguari Stork | Laranjeiras *et al.* 2006 |
| *Jabiru mycteria* | Jabiru | Naka e M.Barnett 2001 |
| *Mycteria americana* | Wood Stork | Laranjeiras *et al.* 2006 |
| SUIFORMES | | |
| PHALACROCORACIDAE | | |
| *Phalacrocorax brasilianus* | Neotropical Cormorant | Silveira *et al.* 2007 |

| SPECIES | VERNACULAR NAME | FIRST RECORD |
|---|---|---|
| PELECANIFORMES | | |
| ANHINGIDAE | | |
| *Anhinga anhinga* | Anhinga | Naka e M.Barnett 2001 |
| ARDEIDAE | | |
| *Tigrisoma lineatum* | Rufescent Tiger-heron | Naka e M.Barnett 2001 |
| *Agamia agami* | Agami Heron | Cohn-Haft *et al.* 2009 |
| *Cochlearius cochlearius* | Boat-billed Heron | Silveira *et al.* 2007 |
| *Zebrilus undulatus* | Zigzag Heron | Cohn-Haft *et al.* 2009 |
| *Botaurus pinnatus* | Pinnated Bittern | Cohn-Haft *et al.* 2009 |
| *Nycticorax nycticorax* | Black-Crowned Night Heron, Night Heron | Laranjeiras *et al.* 2014 |
| *Butorides striata* | Green-backed Heron | Cohn-Haft *et al.* 2001 |
| *Bubulcus ibis* | Cattle Egret | Cohn-Haft *et al.* 2001 |
| *Ardea cocoi* | Cocoi Heron | Cohn-Haft *et al.* 2001 |
| *Ardea alba* | Great White Egret, Great White Heron | Naka e M.Barnett 2001 |
| *Pilherodius pileatus* | Capped Heron | Cohn-Haft *et al.* 2001 |
| *Egretta thula* | Snowy Egret | Naka e M.Barnett 2001 |
| *Egretta caerulea* | Little Blue Heron | Cohn-Haft *et al.* 2009 |
| THRESKIORNITHIDAE | | |
| *Mesembrinibis cayennensis* | Green Ibis | Cohn-Haft *et al.* 2001 |
| *Platalea ajaja* | Roseate Spoonbill | Naka e M.Barnett 2001 |
| ACCIPITRIFORMES | | |
| CATHARTIDAE | | |
| *Cathartes aura* | Turkey Vulture | Cohn-Haft *et al.* 2001 |
| *Cathartes burrovianus* | Lesser Yellow-headed Vulture | Cohn-Haft *et al.* 2001 |
| *Cathartes melambrotus* | Greater Yellow-headed Vulture | Cohn-Haft *et al.* 2009 |
| *Coragyps atratus* | American Black Vulture | Cohn-Haft *et al.* 2001 |
| *Sarcoramphus papa* | King Vulture | Naka e M.Barnett 2001 |
| PANDIONIDAE | | |
| *Pandion haliaetus* | Osprey | Naka e M.Barnett 2001 |
| ACCIPITRIDAE | | |
| *Leptodon cayanensis* | Grey-headed Kite | Laranjeiras *et al.* 2014 |
| *Chondrohierax uncinatus* | Hook-billed Kite | Cohn-Haft *et al.* 2009 |
| *Elanoides forficatus* | Swallow-tailed Kite | Czaban 2005 |
| *Gampsonyx swainsonii* | Pearl Kite | Cohn-Haft *et al.* 2001 |
| *Harpagus bidentatus* | Double-toothed Kite | Laranjeiras et al. 2014 |
| *Ictinia plumbea* | Plumbeous Kite | Cohn-Haft *et al.* 2001 |

| SPECIES | VERNACULAR NAME | FIRST RECORD |
|---|---|---|
| *Busarellus nigricollis* | Black-collared Hawk | Cohn-Haft *et al.* 2001 |
| *Rostrhamus sociabilis* | Snail Kite | Cohn-Haft *et al.* 2009 |
| *Geranospiza caerulescens* | Crane Hawk | Cohn-Haft *et al.* 2001 |
| *Buteogallus schistaceus* | Slate-colored Hawk | Naka e M.Barnett 2001 |
| *Heterospizias meridionalis* | Savanna Hawk | Cohn-Haft *et al.* 2001 |
| *Urubitinga urubitinga* | Great Black Hawk | Cohn-Haft *et al.* 2001 |
| *Rupornis magnirostris* | Roadside Hawk | Cohn-Haft *et al.* 2001 |
| *Geranoaetus albicaudatus* | White-tailed Hawk | Santos 2003 |
| *Pseudastur albicollis* | White Hawk | Laranjeiras *et al.* 2014 |
| *Leucopternis melanops* | Black-faced Hawk | Cohn-Haft *et al.* 2009 |
| *Buteo nitidus* | Grey-lined Hawk | Czaban 2005 |
| *Buteo platypterus* | Broad-winged Hawk | Laranjeiras *et al.* 2014 |
| *Buteo brachyurus* | Short-tailed Hawk | Laranjeiras *et al.* 2014 |
| *Morphnus guianensis* | Crested Eagle | Czaban 2005 |
| *Harpia harpyja* | Harpy Eagle | Cohn-Haft *et al.* 2009 |
| *Spizaetus tyrannus* | Black Hawk-eagle | Cohn-Haft *et al.* 2009 |
| *Spizaetus melanoleucus* | Black-and-white Hawk-eagle | Laranjeiras *et al.* 2014 |
| *Spizaetus ornatus* | Ornate Hawk-eagle | Naka e M.Barnett 2001 |
| EURYPYGIFORMES | | |
| EURYPYGIDAE | | |
| *Eurypyga helias* | Sunbittern | Cohn-Haft *et al.* 2001 |
| GRUIFORMES | | |
| ARAMIDAE | | |
| *Aramus guarauna* | Limpkin | Naka e M.Barnett 2001 |
| PSOPHIIDAE | | |
| *Psophia crepitans* | Grey-winged Trumpeter | Santos 2003 |
| RALLIDAE | | |
| *Aramides cajaneus* | Grey-necked Wood-rail | Naka e M.Barnett 2001 |
| *Laterallus viridis*[5] | Russet-crowned Crake | Cohn-Haft *et al.* 2001 |
| *Laterallus exilis* | Gray-breasted Crake | Cohn-Haft *et al.* 2009 |
| *Porzana albicollis* | Ash-throated Crake | Cohn-Haft *et al.* 2001 |
| *Porphyrio martinicus* | Purple Gallinule | Laranjeiras *et al.* 2014 |
| *Porphyrio flavirostris* | Azure Gallinule | Cohn-Haft *et al.* 2009 |
| HELIORNITHIDAE | | |
| *Heliornis fulica* | Sungrebe | Santos 2003 |
| CHARADRIIFORMES | | |
| CHARADRIIDAE | | |
| *Vanellus cayanus* | Pied Lapwing | Cohn-Haft *et al.* 2001 |
| *Vanellus chilensis* | Southern Lapwing | Cohn-Haft *et al.* 2001 |
| *Charadrius collaris* | Collared Plover | Naka e M.Barnett 2001 |
| SCOLOPACIDAE | | |
| *Gallinago paraguaiae* | South American Snipe | Naka e M.Barnett 2001 |

| SPECIES | VERNACULAR NAME | FIRST RECORD |
|---|---|---|
| *Gallinago undulata* | Giant Snipe | Naka e M.Barnett 2001 |
| *Bartramia longicauda* | Upland Sandpiper | Cohn-Haft *et al.* 2009 |
| *Actitis macularius* | Spotted Sandpiper | Naka e M.Barnett 2001 |
| *Tringa solitaria* | Solitary Sandpiper | Naka e M.Barnett 2001 |
| *Tringa melanoleuca* | Greater Yellowlegs | Naka e M.Barnett 2001 |
| *Tringa flavipes* | Lesser Yellowlegs | Naka e M.Barnett 2001 |
| *Calidris minutilla* | Least Sandpiper | Cohn-Haft *et al.* 2009 |
| *Calidris fuscicollis* | White-rumped Sandpiper | Cohn-Haft *et al.* 2009 |
| *Calidris melanotos* | Pectoral Sandpiper | Cohn-Haft *et al.* 2009 |
| JACANIDAE | | |
| *Jacana jacana* | Wattled Jacana | Cohn-Haft *et al.* 2001 |
| STERNIDAE | | |
| *Sternula superciliaris* | Yellow-billed Tern | Naka e M.Barnett 2001 |
| *Phaetusa simplex* | Large-billed Tern | Naka e M.Barnett 2001 |
| RYNCHOPIDAE | | |
| *Rynchops niger* | Black Skimmer | Naka e M.Barnett 2001 |
| COLUMBIFORMES | | |
| COLUMBIDAE | | |
| *Columbina passerina* | Common Ground-dove | Cohn-Haft *et al.* 2001 |
| *Columbina minuta* | Plain-breasted Ground-dove | Naka e M.Barnett 2001 |
| *Columbina talpacoti* | Ruddy Ground-dove | Cohn-Haft *et al.* 2001 |
| *Claravis pretiosa* | Blue Ground-dove | Czaban 2005 |
| *Patagioenas speciosa* | Scaled Pigeon | Cohn-Haft *et al.* 2001 |
| *Patagioenas cayennensis* | Pale-vented Pigeon | Cohn-Haft *et al.* 2001 |
| *Patagioenas plumbea* | Plumbeous Pigeon | Naka e M.Barnett 2001 |
| *Patagioenas subvinacea* | Ruddy Pigeon | Naka e M.Barnett 2001 |
| *Zenaida auriculata* | Eared Dove | Cohn-Haft *et al.* 2009 |
| *Leptotila verreauxi* | White-tipped Dove | Cohn-Haft *et al.* 2001 |
| *Leptotila rufaxilla* | Gray-fronted Dove | Naka e M.Barnett 2001 |
| *Geotrygon montana* | Ruddy Quail-dove | Santos 2003 |
| OPISTHOCOMIFORMES | | |
| OPISTHOCOMIDAE | | |
| *Opisthocomus hoazin* | Hoatzin | Cohn-Haft *et al.* 2009 |
| CUCULIFORMES | | |
| CUCULIDAE | | |
| *Piaya cayana* | Common Squirrel-cuckoo, Squirrel Cuckoo | Naka e M.Barnett 2001 |
| *Piaya melanogaster* | Black-bellied Cuckoo | Cohn-Haft *et al.* 2009 |
| *Coccyzus melacoryphus* | Dark-billed Cuckoo | Laranjeiras *et al.* 2014 |
| *Coccyzus americanus* | Yellow-billed Cuckoo | Cohn-Haft *et al.* 2009 |
| SPECIES | VERNACULAR NAME | FIRST RECORD |
| *Coccyzus euleri* | Pearly-breasted Cuckoo | Cohn-Haft *et al.* 2009 |

| | | |
|---|---|---|
| *Crotophaga major* | Greater Ani | Naka e M.Barnett 2001 |
| *Crotophaga ani* | Smooth-billed Ani | Cohn-Haft *et al.* 2001 |
| *Tapera naevia* | Striped Cuckoo | Cohn-Haft *et al.* 2001 |
| STRIGIFORMES | | |
| TYTONIDAE | | |
| *Tyto furcata*[6] | Barn Owl | Cohn-Haft *et al.* 2009 |
| STRIGIDAE | | |
| *Megascops choliba* | Tropical Screech-owl | Naka e M.Barnett 2001 |
| *Megascops watsonii* | Tawny-bellied Screech-owl | Naka e M.Barnett 2001 |
| *Lophostrix cristata* | Crested Owl | Cohn-Haft *et al.* 2001 |
| *Pulsatrix perspicillata* | Spectacled Owl | Naka e M.Barnett 2001 |
| *Bubo virginianus* | Great Horned Owl | Silveira *et al.* 2007 |
| *Strix virgata*[7] | Mottled Owl | Naka e M.Barnett 2001 |
| *Glaucidium hardyi* | Amazonian Pygmy-owl | Naka e M.Barnett 2001 |
| *Glaucidium brasilianum* | Ferruginous Pygmy-owl | Laranjeiras *et al.* 2014 |
| CAPRIMULGIFORMES | | |
| NYCTIBIIDAE | | |
| *Nyctibius grandis* | Great Potoo | Laranjeiras *et al.* 2006 |
| *Nyctibius griseus* | Common Potoo | Naka e M.Barnett 2001 |
| CAPRIMULGIDAE | | |
| *Antrostomus rufus* | Rufous Nightjar | Naka e M.Barnett 2001 |
| *Lurocalis semitorquatus* | Short-tailed Nighthawk | Laranjeiras *et al.* 2006 |
| *Hydropsalis leucopyga*[8] | Band-tailed Nighthawk | Naka e M.Barnett 2001 |
| *Hydropsalis nigrescens*[9] | Blackish Nightjar | Cohn-Haft *et al.* 2009 |
| *Hydropsalis albicollis*[10] | Pauraque | Naka e M.Barnett 2001 |
| *Hydropsalis maculicauda*[11] | Spot-tailed Nightjar | Cohn-Haft *et al.* 2009 |
| *Hydropsalis cayennensis* | White-tailed Nightjar | Naka e M.Barnett 2001 |
| *Hydropsalis climacocerca* | Ladder-tailed Nightjar | Naka e M.Barnett 2001 |
| *Chordeiles pusillus* | Least Nighthawk | Naka e M.Barnett 2001 |
| *Chordeiles nacunda* | Nacunda Nighthawk | Gutierrez *et al.* 2009 |
| *Chordeiles minor* | Common Nighthawk | Naka e M.Barnett 2001 |
| *Chordeiles acutipennis* | Lesser Nighthawk | Silveira *et al.* 2007 |
| APODIFORMES | | |
| APODIDAE | | |
| *Streptoprocne zonaris* | White-collared Swift | Laranjeiras *et al.* 2014 |
| *Chaetura spinicaudus* | Band-rumped Swift | Naka e M.Barnett 2001 |
| *Chaetura cinereiventris* | Gray-rumped Swift | Cohn-Haft *et al.* 2009 |
| *Chaetura brachyura* | Short-tailed Swift | Cohn-Haft *et al.* 2009 |
| *Tachornis squamata* | Fork-tailed Palm-swift | Cohn-Haft *et al.* 2001 |
| *Panyptila cayennensis* | Lesser Swallow-tailed Swift | Cohn-Haft *et al.* 2009 |
| TROCHILIDAE | | |
| *Glaucis hirsutus* | Rufous-breasted Hermit | Santos 2003 |
| SPECIES | VERNACULAR NAME | FIRST RECORD |

| | | |
|---|---|---|
| *Threnetes leucurus* | Pale-tailed Barbthroat | Laranjeiras *et al.* 2006 |
| *Phaethornis rupurumii* | Streak-throated Hermit | Santos 2003 |
| *Phaethornis ruber* | Reddish Hermit | Naka e M.Barnett 2001 |
| *Phaethornis hispidus* | White-bearded Hermit | Cohn-Haft *et al.* 2009 |
| *Phaethornis bourcieri* | Straight-billed Hermit | Naka e M.Barnett 2001 |
| *Phaethornis superciliosus* | Long-tailed Hermit | Santos 2003 |
| *Campylopterus largipennis* | Gray-breasted Sabrewing | Cohn-Haft *et al.* 2009 |
| *Florisuga mellivora* | White-necked Jacobin | Czaban 2005 |
| *Anthracothorax nigricollis* | Black-throated Mango | Naka e M.Barnett 2001 |
| *Chrysolampis mosquitus* | Ruby-topaz Hummingbird | Cohn-Haft *et al.* 2009 |
| *Chlorostilbon notatus*[12] | Blue-chinned Emerald | Naka e M.Barnett 2001 |
| *Chlorostilbon mellisugus* | Blue-tailed Emerald | Cohn-Haft *et al.* 2001 |
| *Thalurania furcata* | Fork-tailed Woodnymph | Czaban 2005 |
| *Hylocharis sapphirina* | Rufous-throated Hummingbird | Cohn-Haft *et al.* 2009 |
| *Hylocharis cyanus* | White-chinned Sapphire | Naka e M.Barnett 2001 |
| *Polytmus theresiae* | Green-tailed Goldenthroat | Cohn-Haft *et al.* 2001 |
| *Amazilia versicolor* | Versicolored Emerald | Naka e M.Barnett 2001 |
| *Amazilia fimbriata* | Glittering-throated Emerald | Cohn-Haft *et al.* 2001 |
| *Heliothryx auritus* | Black-eared Fairy | Cohn-Haft *et al.* 2009 |
| *Heliomaster longirostris* | Heliomaster longirostris | Czaban 2005 |
| *Calliphlox amethystina* | Amethyst Woodstar | Czaban 2005 |
| TROGONIFORMES | | |
| TROGONIDAE | | |
| *Trogon melanurus* | Black-tailed Trogon | Naka e M.Barnett 2001 |
| *Trogon viridis* | Amazonian White-tailed Trogon, Green-backed Trogon | Cohn-Haft *et al.* 2001 |
| *Trogon violaceus* | Violaceus Trogon | Naka e M.Barnett 2001 |
| *Trogon rufus* | Black-throated Trogon | Cohn-Haft *et al.* 2009 |
| CORACIIFORMES | | |
| ALCEDINIDAE | | |
| *Megaceryle torquata* | Ringed Kingfisher | Cohn-Haft *et al.* 2001 |
| *Chloroceryle amazona* | Amazon Kingfisher | Cohn-Haft *et al.* 2001 |
| *Chloroceryle aenea* | American Pygmy-kingfisher | Naka e M.Barnett 2001 |
| *Chloroceryle americana* | Green Kingfisher | Cohn-Haft *et al.* 2001 |
| *Chloroceryle inda* | Green-and-rufous Kingfisher | Cohn-Haft *et al.* 2009 |
| MOMOTIDAE | | |
| *Momotus momota* | Amazonian Motmot | Naka e M.Barnett 2001 |
| GALBULIFORMES | | |
| GALBULIDAE | | |
| *Brachygalba lugubris* | Brown Jacamar | Cohn-Haft *et al.* 2009 |
| *Galbula albirostris* | Yellow-billed Jacamar | Naka e M.Barnett 2001 |
| *Galbula galbula* | Green-tailed Jacamar | Cohn-Haft *et al.* 2001 |
| *Galbula leucogastra* | Bronzy Jacamar | Naka e M.Barnett 2001 |

| SPECIES | VERNACULAR NAME | FIRST RECORD |
|---|---|---|
| *Galbula dea* | Paradise Jacamar | Czaban 2005 |
| *Jacamerops aureus* | Great Jacamar | Cohn-Haft *et al.* 2009 |
| BUCCONIDAE | | |
| *Notharchus macrorhynchos* | Guianan Puffbird, White-necked Puffbird | Naka e M.Barnett 2001 |
| *Notharchus tectus* | Greater Pied Puffbird | Czaban 2005 |
| *Bucco tamatia* | Spotted Puffbird | Naka e M.Barnett 2001 |
| *Bucco capensis* | Collared Puffbird | Cohn-Haft *et al.* 2009 |
| *Monasa atra* | Black Nunbird | Naka e M.Barnett 2001 |
| *Monasa nigrifrons* | Black-fronted Nunbird | Laranjeiras *et al.* 2014 |
| *Chelidoptera tenebrosa* | Swallow-winged Puffbird | Cohn-Haft *et al.* 2001 |
| PICIFORMES | | |
| CAPITANIDAE | | |
| *Capito niger* | Black-spotted Barbet | Cohn-Haft *et al.* 2001 |
| *Capito auratus* | Gilded Barbet | Cohn-Haft *et al.* 2009 |
| RAMPHASTIDAE | | |
| *Ramphastos tucanus* | Red-billed Toucan, White-throated Toucan | Naka e M.Barnett 2001 |
| *Ramphastos vitellinus* | Channel-billed Toucan | Naka e M.Barnett 2001 |
| *Selenidera piperivora* | Guianan Toucanet | Cohn-Haft *et al.* 2009 |
| *Pteroglossus viridis* | Green Araçari | Czaban 2005 |
| *Pteroglossus aracari* | Black-necked Araçari | Naka e M.Barnett 2001 |
| *Pteroglossus pluricinctus* | Many-banded Araçari | Cohn-Haft *et al.* 2009 |
| PICIDAE | | |
| *Picumnus exilis* | Golden-spangled Piculet | Naka e M.Barnett 2001 |
| *Picumnus spilogaster* | White-bellied Piculet | Cohn-Haft *et al.* 2009 |
| SPECIES | VERNACULAR NAME | FIRST RECORD |
| *Melanerpes cruentatus* | Yellow-tufted Woodpecker | Naka e M.Barnett 2001 |
| *Veniliornis cassini* | Golden-collared Woodpecker | Naka e M.Barnett 2001 |
| *Veniliornis passerinus* | Little Woodpecker | Laranjeiras *et al.* 2014 |
| *Piculus flavigula* | Yellow-throated Woodpecker | Naka e M.Barnett 2001 |
| *Piculus capistratus*[13] | Golden-green Woodpecker | Cohn-Haft *et al.* 2009 |
| *Colaptes punctigula* | Spot-breasted Woodpecker | Cohn-Haft *et al.* 2009 |
| *Celeus undatus* | Waved Woodpecker | Cohn-Haft *et al.* 2009 |
| *Celeus grammicus* | Scaly-breasted Woodpecker | Naka e M.Barnett 2001 |
| *Celeus elegans* | Chestnut Woodpecker | Naka e M.Barnett 2001 |
| *Celeus flavus* | Cream-colored Woodpecker | Naka e M.Barnett 2001 |
| *Celeus torquatus* | Ringed Woodpecker | Naka e M.Barnett 2001 |
| *Dryocopus lineatus* | Lineated Woodpecker | Cohn-Haft *et al.* 2001 |
| *Campephilus rubricollis* | Red-necked Woodpecker | Naka e M.Barnett 2001 |
| *Campephilus melanoleucos* | Crimson-crested Woodpecker | Naka e M.Barnett 2001 |
| FALCONIFORMES | | |
| FALCONIDAE | | |

| | | |
|---|---|---|
| *Daptrius ater* | Black Caracara | Naka e M.Barnett 2001 |
| SPECIES | VERNACULAR NAME | FIRST RECORD |
| *Ibycter americanus* | Red-throated Caracara | Laranjeiras *et al.* 2006 |
| *Caracara cheriway* | Crested Caracara, Northern Crested Caracara | Cohn-Haft *et al.* 2001 |
| *Milvago chimachima* | Yellow-headed Caracara | Cohn-Haft *et al.* 2001 |
| *Herpetotheres cachinnans* | Laughing Falcon | Naka e M.Barnett 2001 |
| *Micrastur ruficollis* | Barred Forest-falcon | Silveira *et al.* 2007 |
| *Micrastur gilvicollis* | Lined Forest-falcon | Cohn-Haft *et al.* 2009 |
| *Micrastur mirandollei* | Slaty-backed Forest-falcon | Naka e M.Barnett 2001 |
| *Micrastur semitorquatus* | Collared Forest-falcon | Cohn-Haft *et al.* 2009 |
| *Falco sparverius* | American Kestrel | Czaban 2005 |
| *Falco rufigularis* | Bat Falcon | Santos 2003 |
| PSITTACIFORMES | | |
| PSITTACIDAE | | |
| *Ara ararauna* | Blue-and-yellow Macaw | Cohn-Haft *et al.* 2001 |
| *Ara macao* | Scarlet Macaw | Laranjeiras *et al.* 2006 |
| *Ara chloropterus* | Red-and-green Macaw | Cohn-Haft *et al.* 2001 |
| *Ara severus* | Chestnut-fronted Macaw | Naka e M.Barnett 2001 |
| *Orthopsittaca manilatus* | Red-bellied Macaw | Naka e M.Barnett 2001 |
| *Diopsittaca nobilis* | Northern Red-shouldered Macaw | Cohn-Haft *et al.* 2009 |
| *Psittacara leucophthalmus* | White-eyed Parakeet | Cohn-Haft *et al.* 2009 |
| *Eupsittula pertinax* | Brown-throated Parakeet | Cohn-Haft *et al.* 2001 |
| *Brotogeris chrysoptera* | Golden-winged Parakeet | Naka e M.Barnett 2001 |
| *Touit huetii* | Scarlet-shouldered Parrotlet | Naka e M.Barnett 2001 |
| *Touit purpuratus* | Sapphire-rumped Parrotlet | Santos 2003 |
| *Pionites melanocephalus* | Black-headed Parrot | Naka e M.Barnett 2001 |
| *Pyrilia barrabandi* | Orange-cheeked Parrot | Cohn-Haft *et al.* 2009 |
| *Pyrilia caica* | Caica Parrot | Cohn-Haft *et al.* 2009 |
| *Pionus menstruus* | Blue-headed Parrot | Naka e M.Barnett 2001 |
| *Pionus fuscus* | Dusky Parrot | Naka e M.Barnett 2001 |
| *Amazona festiva* | Festive Amazon, Festive Parrot | Naka e M.Barnett 2001 |
| *Amazona farinosa* | Southern Mealy Amazon | Cohn-Haft *et al.* 2009 |
| *Amazona amazonica* | Orange-winged Amazon, Orange-winged Parrot | Cohn-Haft *et al.* 2001 |
| *Amazona ochrocephala* | Yellow-crowned Amazon, Yellow-crowned Parrot | Naka e M.Barnett 2001 |
| *Deroptyus accipitrinus* | Red-fan Parrot | Naka e M.Barnett 2001 |
| PASSERIFORMES | | |
| THAMNOPHILIDAE | | |
| *Pygiptila stellaris* | Spot-winged Antshrike | Cohn-Haft *et al.* 2009 |
| *Microrhopias quixensis* | Dot-winged Antwren | Naka e M.Barnett 2001 |
| *Epinecrophylla gutturalis* | Brown-bellied Antwren | Cohn-Haft *et al.* 2009 |
| *Aprositornis disjuncta*[14] | Yapacana Antbird | Cohn-Haft *et al.* 2001 |

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| *Myrmophylax atrothorax*[15] | Black-throated Antbird | Naka e M.Barnett 2001 |
| *Myrmotherula brachyura* | Pygmy Antwren | Naka e M.Barnett 2001 |
| SPECIES | VERNACULAR NAME | FIRST RECORD |
| *Myrmotherula surinamensis* | Guianan Streaked Antwren | Cohn-Haft *et al.* 2009 |
| *Myrmotherula cherriei* | Cherrie's Antwren | Naka e M.Barnett 2001 |
| *Myrmotherula klagesi* | Klages's Antwren | Naka e M.Barnett 2001 |
| *Myrmotherula axillaris* | White-flanked Antwren | Naka e M.Barnett 2001 |
| *Myrmotherula longipennis* | Long-winged Antwren | Cohn-Haft *et al.* 2009 |
| *Myrmotherula assimilis* | Leaden Antwren | Naka e M.Barnett 2001 |
| *Formicivora grisea* | White-fringed Antwren, Southern White-fringed Antwren | Naka e M.Barnett 2001 |
| *Isleria guttata* | Rufous-bellied Antwren | Santos 2003 |
| *Thamnomanes caesius* | Cinereous Antshrike | Naka e M.Barnett 2001 |
| *Herpsilochmus dorsimaculatus* | Spot-backed Antwren | Naka e M.Barnett 2001 |
| *Herpsilochmus rufimarginatus* | Rufous-winged Antwren | Naka e M.Barnett 2001 |
| *Sakesphorus canadensis* | Black-crested Antshrike | Cohn-Haft *et al.* 2001 |
| *Thamnophilus doliatus* | Barred Antshrike | Cohn-Haft *et al.* 2001 |
| *Thamnophilus murinus* | Mouse-coloured Antshrike | Naka e M.Barnett 2001 |
| *Thamnophilus nigrocinereus* | Blackish-gray Antshrike | Naka e M.Barnett 2001 |
| THAMNOPHILIDAE | | |
| *Thamnophilus punctatus* | Northern Slaty-antshrike | Naka e M.Barnett 2001 |
| *Thamnophilus amazonicus* | Amazonian Antshrike | Naka e M.Barnett 2001 |
| *Cymbilaimus lineatus* | Fasciated Antshrike | Cohn-Haft *et al.* 2009 |
| *Taraba major* | Great Antshrike | Naka e M.Barnett 2001 |
| *Frederickena viridis* | Black-throated Antshrike | Laranjeiras *et al.* 2014 |
| *Myrmoderus ferrugineus*[16] | Ferruginous-backed Antbird | Naka e M.Barnett 2001 |
| *Hypocnemoides melanopogon* | Black-chinned Antbird | Naka e M.Barnett 2001 |
| *Hylophylax naevius* | Spot-backed Antbird | Cohn-Haft *et al.* 2009 |
| *Hylophylax punctulatus* | Dot-backed Antbird | Santos 2003 |
| *Sclateria naevia* | Silvered Antbird | Cohn-Haft *et al.* 2009 |
| *Myrmelastes leucostigma*[17] | Spot-winged Antbird | Cohn-Haft *et al.* 2009 |
| *Myrmoborus leucophrys* | White-browed Antbird | Santos 2003 |
| *Myrmoborus lugubris* | Ash-breasted Antbird | Santos 2003 |
| *Percnostola subcristata*[18] | Black-headed Antbird | Naka e M.Barnett 2001 |
| *Cercomacra cinerascens* | Gray Antbird | Cohn-Haft *et al.* 2001 |
| *Cercomacra tyrannina* | Dusky Antbird | Naka e M.Barnett 2001 |
| *Cercomacra laeta* | Laeta Antbird, Willis's Antbird | Cohn-Haft *et al.* 2001 |
| *Cercomacra nigrescens* | Blackish Antbird | Naka e M.Barnett 2001 |
| *Cercomacra carbonaria* | Rio Branco Antbird | Naka e M.Barnett 2001 |
| *Hypocnemis cantator* | Guianan Warbling Antbird | Naka e M.Barnett 2001 |
| *Pithys albifrons* | White-plumed Antbird | Cohn-Haft *et al.* 2009 |
| *Willisornis poecilinotus* | Common Scale-backed Antbird | Naka e M.Barnett 2001 |

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| *Gymnopithys rufigula* | Rufous-throated Antbird | Naka e M.Barnett 2001 |
| GRALLARIIDAE | | |
| *Myrmothera campanisona* | Thrush-like Antpitta | Cohn-Haft *et al.* 2001 |
| SPECIES | VERNACULAR NAME | FIRST RECORD |
| FORMICARIIDAE | | |
| *Formicarius colma* | Rufous-capped Antthrush | Naka e M.Barnett 2001 |
| DENDROCOLAPTIDAE | | |
| *Dendrocincla fuliginosa* | Plain-brown Woodcreeper | Santos 2003 |
| *Dendrocincla merula* | White-chinned Woodcreeper | Cohn-Haft *et al.* 2009 |
| *Deconychura longicauda* | Long-tailed Woodcreeper | Laranjeiras *et al.* 2014 |
| *Sittasomus griseicapillus* | Olivaceous Woodcreeper | Cohn-Haft *et al.* 2009 |
| *Glyphorynchus spirurus* | Wedge-billed Woodcreeper | Naka e M.Barnett 2001 |
| *Xiphorhynchus pardalotus* | Chestnut-rumped Woodcreeper | Naka e M.Barnett 2001 |
| *Xiphorhynchus obsoletus* | Striped Woodcreeper | Cohn-Haft *et al.* 2001 |
| *Xiphorhynchus guttatus* | Buff-throated Woodcreeper | Naka e M.Barnett 2001 |
| *Campylorhamphus trochilirostris* | Red-billed Scythebill | Laranjeiras *et al.* 2014 |
| *Campylorhamphus procurvoides* | Curve-billed Scythebill | Cohn-Haft *et al.* 2009 |
| *Dendroplex picus* | Straight-billed Woodcreeper | Cohn-Haft *et al.* 2001 |
| *Dendroplex kienerii* | Zimmer's Woodcreeper | Naka e M.Barnett 2001 |
| *Lepidocolaptes albolineatus* | Lineated Woodcreeper | Cohn-Haft *et al.* 2009 |
| *Nasica longirostris* | Long-billed Woodcreeper | Cohn-Haft *et al.* 2009 |
| *Dendrexetastes rufigula* | Cinnamon-throated Woodcreeper | Cohn-Haft *et al.* 2009 |
| *Dendrocolaptes certhia* | Amazonian Barred Woodcreeper | Naka e M.Barnett 2001 |
| *Dendrocolaptes picumnus* | Black-banded Woodcreeper | Cohn-Haft *et al.* 2001 |
| *Xiphocolaptes promeropirhynchus* | Strong-billed Woodcreeper | Naka e M.Barnett 2001 |
| XENOPIDAE | | |
| *Xenops minutus* | Plain Xenops | Santos 2003 |
| FURNARIIDAE | | |
| *Furnarius leucopus* | Pale-legged Hornero | Naka e M.Barnett 2001 |
| *Clibanornis obscurus*[19] | Ruddy Foliage-gleaner | Cohn-Haft *et al.* 2009 |
| *Automolus rufipileatus* | Chestnut-crowned Foliage-gleaner | Naka e M.Barnett 2001 |
| *Automolus cervicalis*[20] | Olive-backed Foliage-gleaner | Santos 2003 |
| *Automolus ochrolaemus* | Buff-throated Foliage-gleaner | Cohn-Haft *et al.* 2001 |
| *Philydor pyrrhodes* | Cinnamon-rumped Foliage-gleaner | Cohn-Haft *et al.* 2009 |
| *Certhiaxis cinnamomeus* | Yellow-chinned Spinetail | Cohn-Haft *et al.* 2001 |
| *Synallaxis albescens* | Pale-breasted Spinetail | Cohn-Haft *et al.* 2001 |
| *Synallaxis rutilans* | Ruddy Spinetail | Naka e M.Barnett 2001 |
| *Synallaxis propinqua* | White-bellied Spinetail | Cohn-Haft *et al.* 2009 |
| *Synallaxis gujanensis* | Plain-crowned Spinetail | Naka e M.Barnett 2001 |
| *Cranioleuca vulpina* | Rusty-backed Spinetail | Naka e M.Barnett 2001 |
| *Cranioleuca gutturata* | Speckled Spinetail | Naka e M.Barnett 2001 |

| PIPRIDAE | | |
|---|---|---|
| *Neopelma chrysocephalum* | Saffron-crested Neopelma | Naka e M.Barnett 2001 |
| *Pipra filicauda* | Wire-tailed Manakin | Santos 2003 |
| *Ceratopipra erythrocephala* | Golden-headed Manakin | Naka e M.Barnett 2001 |
| SPECIES | VERNACULAR NAME | FIRST RECORD |
| *Manacus manacus* | White-bearded Manakin | Santos 2003 |
| *Heterocercus flavivertex* | Yellow-crested Manakin, Yellow-crowned Manakin | Cohn-Haft *et al.* 2009 |
| *Dixiphia pipra* | White-crowned Manakin | Naka e M.Barnett 2001 |
| *Xenopipo atronitens* | Black Manakin | Cohn-Haft *et al.* 2001 |
| *Chiroxiphia pareola* | Blue-backed Manakin | Cohn-Haft *et al.* 2009 |
| ONYCHORHYNCHIDAE | | |
| *Onychorhynchus coronatus* | Amazonian Royal Flycatcher | Cohn-Haft *et al.* 2009 |
| *Terenotriccus erythrurus* | Ruddy-tailed Flycatcher | Cohn-Haft *et al.* 2009 |
| *Myiobius barbatus* | Bearded Flycatcher | Santos 2003 |
| TITYRIDAE | | |
| *Schiffornis major* | Greater Schiffornis, Varzea Schiffornis | Santos 2003 |
| *Schiffornis olivacea* | Guianan Schiffornis, Olivaceous Schiffornis | Cohn-Haft *et al.* 2009 |
| *Laniocera hypopyrra* | Cinereous Mourner | Naka e M.Barnett 2001 |
| *Tityra inquisitor* | Black-crowned Tityra | Cohn-Haft *et al.* 2009 |
| *Tityra cayana* | Black-tailed Tityra | Cohn-Haft *et al.* 2001 |
| *Pachyramphus rufus* | Cinereous Becard | Naka e M.Barnett 2001 |
| *Pachyramphus polychopterus* | White-winged Becard | Cohn-Haft *et al.* 2001 |
| *Pachyramphus marginatus* | Black-capped Becard | Cohn-Haft *et al.* 2009 |
| *Pachyramphus surinamus* | Glossy-backed Becard | Cohn-Haft *et al.* 2009 |
| *Pachyramphus minor* | Pink-throated Becard | Naka e M.Barnett 2001 |
| COTINGIDAE | | |
| *Lipaugus vociferans* | Screaming Piha | Naka e M.Barnett 2001 |
| *Gymnoderus foetidus* | Bare-necked Fruitcrow | Naka e M.Barnett 2001 |
| *Xipholena punicea* | Pompadour Cotinga | Czaban 2005 |
| *Procnias albus* | White Bellbird | Cohn-Haft *et al.* 2009 |
| *Cotinga cayana* | Spangled Cotinga | Cohn-Haft *et al.* 2009 |
| *Querula purpurata* | Purple-throated Fruitcrow | Naka e M.Barnett 2001 |
| *Perissocephalus tricolor* | Capuchinbird | Cohn-Haft *et al.* 2009 |
| *Cephalopterus ornatus* | Amazonian Umbrellabird | Cohn-Haft *et al.* 2009 |
| PIPRITIDAE | | |
| *Piprites chloris* | Wing-barred Piprites | Cohn-Haft *et al.* 2009 |
| PLATYRINCHIDAE | | |
| *Platyrinchus saturatus* | Cinnamon-crested Spadebill | Cohn-Haft *et al.* 2009 |
| *Platyrinchus coronatus* | Golden-crowned Spadebill | Cohn-Haft *et al.* 2009 |
| *Platyrinchus platyrhynchos* | White-crested Spadebill | Cohn-Haft *et al.* 2009 |
| RHYNCHOCYCLIDAE | | |

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|---|---|---|
| *Mionectes oleagineus* | Ochre-bellied Flycatcher | Santos 2003 |
| *Mionectes macconnelli* | MacConnell's Flycatcher | Cohn-Haft *et al.* 2009 |
| *Rhynchocyclus olivaceus* | Olivaceous Flatbill | Santos 2003 |
| *Tolmomyias sulphurescens* | Yellow-olive Flatbill | Cohn-Haft *et al.* 2009 |
| *Tolmomyias assimilis* | Yellow-margined Flycatcher, Zimmer's Flatbill | Naka e M.Barnett 2001 |
| SPECIES | VERNACULAR NAME | FIRST RECORD |
| *Tolmomyias poliocephalus* | Gray-crowned Flycatcher | Cohn-Haft *et al.* 2001 |
| *Tolmomyias flaviventris* | Yellow-breasted Flycatcher, Ochre-lored Flatbill | Cohn-Haft *et al.* 2001 |
| *Todirostrum maculatum* | Spotted Tody-flycatcher | Naka e M.Barnett 2001 |
| *Todirostrum cinereum* | Common Tody-Flycatcher | Naka e M.Barnett 2001 |
| *Todirostrum pictum* | Painted Tody-Flycatcher | Naka e M.Barnett 2001 |
| *Poecilotriccus sylvia* | Slaty-headed Tody-Flycatcher | Cohn-Haft *et al.* 2009 |
| *Myiornis ecaudatus* | Short-tailed pygmy tyrant | Naka e M.Barnett 2001 |
| *Hemitriccus minor* | Snethlage's Tody-Tyrant | Naka e M.Barnett 2001 |
| *Hemitriccus zosterops* | White-eyed Tody-tyrant | Laranjeiras *et al.* 2014 |
| *Hemitriccus margaritaceiventer* | Pearly-vented Tody-tyrant | Naka e M.Barnett 2001 |
| *Hemitriccus inornatus* | Pelzeln's Tody-tyrant | Cohn-Haft *et al.* 2009 |
| *Lophotriccus vitiosus* | Double-banded Pygmy-tyrant | Cohn-Haft *et al.* 2009 |
| *Lophotriccus galeatus* | Helmeted Pygmy-tyrant | Cohn-Haft *et al.* 2001 |
| TYRANNIDAE | | |
| *Zimmerius acer* | Guianan Tyrannulet | Cohn-Haft *et al.* 2009 |
| *Stigmatura napensis* | Lesser Wagtail-tyrant | Cohn-Haft *et al.* 2009 |
| *Inezia subflava* | Amazonian Inezia, Amazonian Tyrannulet | Cohn-Haft *et al.* 2001 |
| *Ornithion inerme* | White-lored Tyrannulet | Cohn-Haft *et al.* 2001 |
| *Camptostoma obsoletum* | Southern Beardless-tyrannulet | Cohn-Haft *et al.* 2001 |
| *Elaenia flavogaster* | Yellow-bellied Elaenia | Cohn-Haft *et al.* 2001 |
| *Elaenia parvirostris* | Small-billed Elaenia | Cohn-Haft *et al.* 2009 |
| *Elaenia cristata* | Plain-crested Elaenia | Cohn-Haft *et al.* 2001 |
| *Elaenia chiriquensis* | Lesser Elaenia | Cohn-Haft *et al.* 2009 |
| *Elaenia ruficeps* | Rufous-crowned Elaenia | Naka e M.Barnett 2001 |
| *Myiopagis gaimardii* | Forest Elaenia | Naka e M.Barnett 2001 |
| *Myiopagis caniceps* | Gray Elaenia | Naka e M.Barnett 2001 |
| *Myiopagis flavivertex* | Yellow-crowned Elaenia | Naka e M.Barnett 2001 |
| *Tyrannulus elatus* | Yellow-crowned Tyrannulet | Naka e M.Barnett 2001 |
| *Capsiempis flaveola* | Yellow Tyrannulet | Naka e M.Barnett 2001 |
| *Phaeomyias murina* | Mouse-colored Tyrannulet | Cohn-Haft *et al.* 2009 |
| *Serpophaga hypoleuca* | River Tyrannulet | Cohn-Haft *et al.* 2009 |
| *Attila cinnamomeus* | Cinnamon Attila | Cohn-Haft *et al.* 2001 |
| *Attila spadiceus* | Bright-rumped Attila | Naka e M.Barnett 2001 |
| *Legatus leucophaius* | Piratic Flycatcher | Cohn-Haft *et al.* 2009 |
| *Ramphotrigon ruficauda* | Rufous-tailed Flatbill | Naka e M.Barnett 2001 |

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| *Myiarchus tuberculifer* | Dusky-capped Flycatcher | Cohn-Haft *et al.* 2001 |
| *Myiarchus swainsoni* | Myiarchus swainsoni | Cohn-Haft *et al.* 2009 |
| *Myiarchus ferox* | Short-crested Flycatcher | Naka e M.Barnett 2001 |
| *Myiarchus tyrannulus* | Brown-crested Flycatcher | Naka e M.Barnett 2001 |

| SPECIES | VERNACULAR NAME | FIRST RECORD |
|---|---|---|
| TYRANNIDAE | | |
| *Sirystes sibilator* | Eastern Sirystes, Sirystes | Cohn-Haft *et al.* 2009 |
| *Rhytipterna simplex* | Grayish Mourner | Naka e M.Barnett 2001 |
| *Rhytipterna immunda* | Pale-bellied Mourner | Naka e M.Barnett 2001 |
| *Pitangus sulphuratus* | Great Kiskadee | Naka e M.Barnett 2001 |
| *Philohydor lictor* | Lesser Kiskadee | Cohn-Haft *et al.* 2001 |
| *Myiodynastes maculatus* | Streaked Flycatcher | Laranjeiras *et al.* 2006 |
| *Tyrannopsis sulphurea* | Sulphury Flycatcher | Cohn-Haft *et al.* 2009 |
| *Megarynchus pitangua* | Boat-billed Flycatcher | Cohn-Haft *et al.* 2001 |
| *Myiozetetes cayanensis* | Rusty-margined Flycatcher | Cohn-Haft *et al.* 2001 |
| *Tyrannus albogularis* | White-throated Kingbird | Naka e M.Barnett 2001 |
| *Tyrannus melancholicus* | Tropical Kingbird | Cohn-Haft *et al.* 2001 |
| *Tyrannus savana* | Fork-tailed Flycatcher | Cohn-Haft *et al.* 2001 |
| *Empidonomus varius* | Variegated Flycatcher | Laranjeiras *et al.* 2006 |
| *Conopias trivirgatus* | Three-striped Flycatcher | Cohn-Haft *et al.* 2009 |
| *Conopias parvus* | Yellow-throated Flycatcher | Naka e M.Barnett 2001 |
| *Pyrocephalus rubinus* | Vermilion Flycatcher | Silveira *et al.* 2007 |
| *Fluvicola pica* | Pied Water-tyrant | Silveira *et al.* 2007 |
| *Arundinicola leucocephala* | White-headed Marsh-tyrant | Cohn-Haft *et al.* 2001 |
| *Ochthornis littoralis* | Drab Water Tyrant | Naka e M.Barnett 2001 |
| *Cnemotriccus fuscatus* | Fuscous Flycatcher | Cohn-Haft *et al.* 2009 |
| *Lathrotriccus euleri* | Euler's Flycatcher | Santos 2003 |
| *Contopus virens* | Eastern Wood-pewee | Cohn-Haft *et al.* 2009 |
| *Knipolegus poecilocercus* | Amazonian Black Tyrant | Cohn-Haft *et al.* 2009 |
| VIREONIDAE | | |
| *Cyclarhis gujanensis* | Rufous-browed Peppershrike | Naka e M.Barnett 2001 |
| *Vireo olivaceus* | Red-eyed Vireo | Naka e M.Barnett 2001 |
| *Hylophilus thoracicus* | Lemon-chested Greenlet | Cohn-Haft *et al.* 2009 |
| *Hylophilus semicinereus* | Gray-chested Greenlet | Naka e M.Barnett 2001 |
| *Hylophilus pectoralis* | Ashy-headed Greenlet | Cohn-Haft *et al.* 2009 |
| *Hylophilus muscicapinus* | Buff-cheeked Greenlet | Naka e M.Barnett 2001 |
| *Hylophilus ochraceiceps* | Tawny-crowned Greenlet | Cohn-Haft *et al.* 2009 |
| CORVIDAE | | |
| *Cyanocorax violaceus* | Violaceous Jay | Cohn-Haft *et al.* 2009 |
| *Cyanocorax cayanus* | Cayenne Jay | Cohn-Haft *et al.* 2001 |

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| HIRUNDINIDAE | | |
| *Pygochelidon melanoleuca* | Black-collared Swallow | Naka e M.Barnett 2001 |
| *Atticora fasciata* | White-banded Swallow | Cohn-Haft *et al.* 2009 |
| *Stelgidopteryx ruficollis* | Southern Rough-winged Swallow | Naka e M.Barnett 2001 |
| *Progne tapera* | Southern Rough-winged Swallow | Cohn-Haft *et al.* 2001 |
| *Progne subis* | Purple Martin | Cohn-Haft *et al.* 2009 |
| SPECIES | VERNACULAR NAME | FIRST RECORD |
| *Progne chalybea* | Gray-breasted Martin | Cohn-Haft *et al.* 2001 |
| *Tachycineta albiventer* | White-winged Swallow | Naka e M.Barnett 2001 |
| *Riparia riparia* | Bank Swallow, Sand Martin | Naka e M.Barnett 2001 |
| *Hirundo rustica* | Barn Swallow | Cohn-Haft *et al.* 2009 |
| TROGLODYTIDAE | | |
| *Troglodytes musculus*[21] | Tropical Wren | Cohn-Haft *et al.* 2001 |
| *Pheugopedius coraya* | Coraya Wren | Cohn-Haft *et al.* 2001 |
| *Cantorchilus leucotis* | Buff-breasted Wren | Cohn-Haft *et al.* 2001 |
| DONACOBIIDAE | | |
| *Donacobius atricapilla* | Black-capped Donacobius | Laranjeiras *et al.* 2014 |
| POLIOPTILIDAE | | |
| *Microbates collaris* | Collared Gnatwren | Cohn-Haft *et al.* 2009 |
| *Ramphocaenus melanurus* | Long-billed Gnatwren | Naka e M.Barnett 2001 |
| *Polioptila plumbea* | Tropical Gnatcatcher | Naka e M.Barnett 2001 |
| TURDIDAE | | |
| *Catharus fuscescens* | Veery | Cohn-Haft *et al.* 2009 |
| *Turdus leucomelas* | Pale-breasted Thrush | Naka e M.Barnett 2001 |
| *Turdus fumigatus* | Cocoa Thrush | Naka e M.Barnett 2001 |
| *Turdus nudigenis* | Spectacled Thrush | Cohn-Haft *et al.* 2009 |
| *Turdus ignobilis* | Black-billed Thrush | Naka e M.Barnett 2001 |
| *Turdus albicollis* | White-necked Thrush | Naka e M.Barnett 2001 |
| MIMIDAE | | |
| *Mimus gilvus* | Tropical Mockingbird | Cohn-Haft *et al.* 2001 |
| PASSERELLIDAE | | |
| *Zonotrichia capensis* | Rufous-collared Sparrow | Naka e M.Barnett 2001 |
| *Ammodramus humeralis* | Grassland Sparrow | Cohn-Haft *et al.* 2009 |
| *Ammodramus aurifrons* | Yellow-browed Sparrow | Cohn-Haft *et al.* 2009 |
| *Arremonops conirostris* | Black-striped Sparrow | Cohn-Haft *et al.* 2009 |
| *Arremon taciturnus* | Pectoral Sparrow | Santos 2003 |
| PARULIDAE | | |
| *Parkesia noveboracensis* | Northern Waterthrush | Cohn-Haft *et al.* 2009 |
| *Setophaga ruticilla* | American Redstart | Cohn-Haft *et al.* 2009 |
| *Setophaga petechia* | American Yellow Warbler, Golden Warbler | Cohn-Haft *et al.* 2009 |
| *Setophaga striata* | Blackpoll Warbler | Cohn-Haft *et al.* 2009 |

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| *Setophaga fusca* | Blackburnian Warbler | Cohn-Haft *et al.* 2009 |
| *Geothlypis aequinoctialis* | Masked Yellowthroat | Cohn-Haft *et al.* 2009 |
| ICTERIDAE | | |
| *Psarocolius viridis* | Green Oropendola | Czaban 2005 |
| *Psarocolius decumanus* | Crested Oropendola | Naka e M.Barnett 2001 |
| *Psarocolius bifasciatus* | Olive Oropendola, Amazonian Oropendola | Cohn-Haft *et al.* 2009 |
| *Procacicus solitarius* | Solitary Cacique | Cohn-Haft *et al.* 2009 |
| SPECIES | VERNACULAR NAME | FIRST RECORD |
| *Cacicus haemorrhous* | Red-rumped Cacique | Santos 2003 |
| *Cacicus cela* | Yellow-rumped Cacique | Cohn-Haft *et al.* 2001 |
| *Icterus cayanensis* | Epaulet Oriole | Cohn-Haft *et al.* 2009 |
| *Icterus chrysocephalus*[22] | Moriche Oriole | Naka e M.Barnett 2001 |
| *Icterus nigrogularis* | Yellow Oriole | Naka e M.Barnett 2001 |
| *Molothrus oryzivorus* | Giant Cowbird | Cohn-Haft *et al.* 2001 |
| *Molothrus bonariensis* | Shiny Cowbird | Czaban 2005 |
| *Sturnella militaris* | Pampas Meadowlark, Red-breasted Blackbird | Cohn-Haft *et al.* 2001 |
| MITROSPINGIDAE | | |
| *Lamprospiza melanoleuca* | Red-billed Pied Tanager | Cohn-Haft *et al.* 2009 |
| THRAUPIDAE | | |
| *Coereba flaveola* | Bananaquit | Cohn-Haft *et al.* 2001 |
| *Saltator maximus* | Buff-throated Saltator' | Cohn-Haft *et al.* 2001 |
| *Saltator azarae*[23] | Greyish Saltator | Cohn-Haft *et al.* 2009 |
| *Saltator grossus* | Slate-coloured Grosbeak | Naka e M.Barnett 2001 |
| *Nemosia pileata* | Hooded Tanager | Santos 2003 |
| *Tachyphonus phoenicius* | Red-shouldered Tanager | Cohn-Haft *et al.* 2001 |
| *Ramphocelus carbo* | Silver-beaked Tanager | Cohn-Haft *et al.* 2001 |
| *Lanio luctuosus*[24] | White-shouldered Tanager | Naka e M.Barnett 2001 |
| *Lanio cristatus*[25] | Flame-crested Tanager | Naka e M.Barnett 2001 |
| *Lanio surinamus*[26] | Fulvous-crested Tanager | Naka e M.Barnett 2001 |
| *Lanio penicillatus*[27] | Gray-headed Tanager | Santos 2003 |
| *Tangara mexicana* | Turquoise Tanager | Santos 2003 |
| *Tangara velia* | Opal-rumped Tanager | Cohn-Haft *et al.* 2009 |
| *Tangara varia* | Dotted Tanager | Cohn-Haft *et al.* 2009 |
| *Tangara punctata* | Spoyted Tanager | Cohn-Haft *et al.* 2009 |
| *Tangara episcopus*[28] | Blue-gray Tanager | Cohn-Haft *et al.* 2001 |
| *Tangara palmarum*[29] | Palm Tanager | Cohn-Haft *et al.* 2001 |
| *Tangara cayana* | Burnished-buff Tanager | Naka e M.Barnett 2001 |
| *Schistochlamys melanopis* | Black-faced Tanager | Naka e M.Barnett 2001 |
| *Paroaria gularis* | Red-capped Cardinal | Naka e M.Barnett 2001 |
| *Dacnis flaviventer* | Yellow-bellied Dacnis | Cohn-Haft *et al.* 2009 |
| *Dacnis cayana* | Blue Dacnis | Cohn-Haft *et al.* 2001 |
| *Cyanerpes nitidus* | Short-billed Honeycreeper | Cohn-Haft *et al.* 2009 |

| | | |
|---|---|---|
| *Cyanerpes caeruleus* | Purple Honeycreeper | Czaban 2005 |
| *Cyanerpes cyaneus* | Red-legged Honeycreeper | Cohn-Haft *et al.* 2009 |
| *Chlorophanes spiza* | Green Honeycreeper | Cohn-Haft *et al.* 2009 |
| *Hemithraupis guira* | Guira Tanager | Cohn-Haft *et al.* 2009 |
| *Conirostrum speciosum* | Chestnut-vented Conebill | Santos 2003 |
| *Conirostrum bicolor* | Bicoloured Conebill | Cohn-Haft *et al.* 2009 |
| *Emberizoides herbicola* | Wedge-tailed Grass-finch | Naka e M.Barnett 2001 |
| *Volatinia jacarina* | Blue-black Grassquit | Cohn-Haft *et al.* 2001 |
| SPECIES | VERNACULAR NAME | FIRST RECORD |
| *Sporophila intermedia* | Gray Seedeater | Cohn-Haft *et al.* 2009 |
| *Sporophila plumbea* | Plumbeous Seedeater | Cohn-Haft *et al.* 2001 |
| *Sporophila bouvronides* | Lesson's Seedeater | Czaban 2005 |
| *Sporophila lineola* | Lined Seedeater | Naka e M.Barnett 2001 |
| *Sporophila nigricollis* | Yellow-bellied Seedeater | Laranjeiras *et al.* 2014 |
| *Sporophila minuta* | Ruddy-breasted Seedeater | Cohn-Haft *et al.* 2009 |
| *Sporophila castaneiventris* | Chestnut-bellied Seedeater | Cohn-Haft *et al.* 2009 |
| *Sporophila angolensis* | Lesser Seed-finch, Chestnut-bellied Seed-Finch | Cohn-Haft *et al.* 2001 |
| *Sporophila crassirostris* | Large-billed Seed-finch | Cohn-Haft *et al.* 2009 |
| *Dolospingus fringilloides* | White-naped Seedeater | Czaban 2005 |
| CARDINALIDAE | | |
| *Granatellus pelzelni* | Rose-breasted Chat | Cohn-Haft *et al.* 2009 |
| *Cyanoloxia rothschildii*[30] | Rothschild's Grosbeak | Naka e M.Barnett 2001 |
| FRINGILLIDAE | | |
| *Euphonia plumbea* | Plumbeous Euphonia | Cohn-Haft *et al.* 2009 |
| *Euphonia chlorotica* | Purple-throated Euphonia | Cohn-Haft *et al.* 2009 |
| *Euphonia violacea* | Violaceous Euphonia | Czaban 2005 |
| *Euphonia chrysopasta* | White-lored Euphonia, Golden-bellied Euphonia | Cohn-Haft *et al.* 2009 |
| *Euphonia minuta* | White-vented Euphonia | Cohn-Haft *et al.* 2009 |
| *Euphonia cayennensis* | Golden-sided Euphonia | Cohn-Haft *et al.* 2001 |

1) Species nomenclature follows the *South American Classification Committee* (SACC), *Classification Version 01 May 2014*, avaiable em www.museum.lsu.edu/~Remsen/SACCListByCountry.xls:

1. *Pipile cumanensis*
2. *Mitu tomentosum*
3. *Buteogallus meridionalis*
4. *Buteogallus urubitinga*
5. *Anurolimnas viridis*
6. *Tyto alba*
7. *Ciccaba virgata*
8. *Nyctiprogne leucopyga*
9. *Nyctipolus nigrescens*
10. *Nyctidromus albicollis*
11. *Hydropsalis maculicaudus*
12. *Chlorestes notata*
13. *Piculus chrysochloros*
14. *Myrmeciza disjuncta*
15. *Myrmeciza atrothorax*
16. *Myrmeciza ferruginea*
17. *Schistocichla leucostigma*
18. *Percnostola rufifrons*
19. Dusky Foliage-gleaner
20. *Automolus infuscatus*
21. *Troglodytes aedon*
22. *Icterus cayanensis*
23. *Saltator coerulescens*
24. *Tachyphonus luctuosus*
25. *Tachyphonus cristatus*
26. *Tachyphonus surinamus*
27. *Eucometis penicillata*
28. *Thraupis episcopus*
29. *Thraupis palmarum*
30. *Cyanocompsa cyanoides*

## APPENDIX 4

Amphibian and reptile species recorded in Viruá National Park

| SPECIES | VERNACULAR NAME | FAMILIE | FIRST RECORD |
|---|---|---|---|
| GYMNOPHIONA | | | |
| *Typhlonectes compressicauda* | Cayenne Caecilian | Caeciliidae | Gordo *et al.* 2009 |
| ANURA | | | |
| *Rhaebo guttatus* | Spotted Toad | Bufonidae | Gordo *et al.* 2009 |
| *Rhinella granulosa* | Common Lesser Toad | Bufonidae | Gordo *et al.* 2009 |
| *Rhinella* cf. *margaritifera* | South American Common Toad | Bufonidae | Lima *et al.* 2007 |
| *Rhinella marina* | Giant Toad | Bufonidae | Gordo *et al.* 2009 |
| *Allophryne ruthveni* | Tukeit Hill Frog | Centrolenidae | Gordo *et al.* 2009 |
| *Dendropsophus brevifrons* | Crump Treefrog | Hylidae | Gordo *et al.* 2009 |
| *Dendropsophus leali* | Leal's Treefrog | Hylidae | Gordo *et al.* 2009 |
| *Dendropsophus leucophyllatus* | Yellow Treefrog | Hylidae | Soto 2010 |
| *Dendropsophus microcephala* | Yellow Treefrog | Hylidae | Soto 2010 |
| *Dendropsophus* sp. | | Hylidae | Gordo *et al.* 2009 |
| *Dendropsophus walfordi* | | Hylidae | Gordo *et al.* 2009 |
| *Hypsiboas cinerascens* | Rana Granosa | Hylidae | Gordo *et al.* 2009 |
| *Hypsiboas crepitans* | Emerald-eyed Treefrog | Hylidae | Lima *et al.* 2007 |
| *Hypsiboas fasciatus* | Gunther's Banded Treefrog | Hylidae | Lima *et al.* 2007 |
| *Hypsiboas geographica* | Map Treefrog | Hylidae | Soto 2010 |
| *Hypsiboas multifasciatus* | Many-banded Treefrog | Hylidae | Lima *et al.* 2007 |
| *Hypsiboas* sp. | | Hylidae | Gordo *et al.* 2009 |
| *Hypsiboas wavrini* | Upper Orinoco Tree Frog | Hylidae | Gordo *et al.* 2009 |
| *Osteocephalus* cf. *planiceps* | Flat-headed Bromeliad Treefrog | Hylidae | Lima *et al.* 2007 |
| *Osteocephalus* sp. | | Hylidae | Gordo *et al.* 2009 |
| *Osteocephalus taurinus* | Manaus Slender-legged Treefrog | Hylidae | Lima *et al.* 2007 |
| *Phyllomedusa bicolor* | Rana Lemur Gigante | Hylidae | Gordo *et al.* 2009 |
| *Scinax boesemani* | Boeseman's Snouted Treefrog | Hylidae | Lima *et al.* 2007 |
| *Scinax* cf. *fuscomarginatus* | Brown-bordered Snouted Treefrog | Hylidae | Gordo *et al.* 2009 |
| *Scinax* cf. *garbei* | Eirunepe Snouted Treefrog | Hylidae | Lima *et al.* 2007 |
| *Scinax* cf. *ruber* | Red Snouted Treefrog | Hylidae | Gordo *et al.* 2009 |
| *Scinax nebulosus* | Spix's Snouted Treefrog | Hylidae | Lima *et al.* 2007 |
| *Scinax* sp. | | Hylidae | Gordo *et al.* 2009 |
| *Physalaemus* aff. *cuvieri* | Barker Frog | Leiuperidae | Lima *et al.* 2007 |
| *Physalaemus ephippifer* | Steindachner's Dwarf Frog | Leiuperidae | Gordo *et al.* 2009 |
| *Pseudopaludicola* sp. | | Leiuperidae | Gordo *et al.* 2009 |
| *Leptodactylus* cf. *andreae* | Lowland Tropical Bullfrog | Leptodactylidae | Gordo *et al.* 2009 |
| *Leptodactylus* cf. *bolivianus* | Bolivian White-lipped Frog | Leptodactylidae | Gordo *et al.* 2009 |
| *Leptodactylus fuscus* | Rufous Frog | Leptodactylidae | Gordo *et al.* 2009 |
| *Leptodactylus* cf. *hylaedactyla* | Napo Tropical Bullfrog | Leptodactylidae | Gordo *et al.* 2009 |
| *Leptodactylus knudseni* | Knudsen's Frog | Leptodactylidae | Lima *et al.* 2007 |
| *Leptodactylus lineatus* | Gold-striped Frog | Leptodactylidae | Gordo *et al.* 2009 |
| *Leptodactylus* lipwhite | | Leptodactylidae | Soto 2010 |
| *Leptodactylus* cf. *longirostris* | Longnose Frog | Leptodactylidae | Lima *et al.* 2007 |
| *Leptodactylus mystaceus* | Amazonian White-lipped Frog | Leptodactylidae | Lima *et al.* 2007 |

| SPECIES | VERNACULAR NAME | FAMILY | FIRST RECORD |
|---|---|---|---|
| *Leptodactylus* cf. *petersii* | Peter's Thin-toed Frog | Leptodactylidae | Lima *et al.* 2007 |
| *Leptodactylus podicipinus* | | Leptodactylidae | Soto 2010 |
| *Leptodactylus rhodomystax* | Loreto White-lipped Frog | Leptodactylidae | Lima *et al.* 2007 |
| *Leptodactylus riveroi* | Rivero's White-lipped Frog | Leptodactylidae | Gordo *et al.* 2009 |
| *Elachistocleis* sp.* | | Microhylidae | Gordo *et al.* 2009 |
| *Pipa pipa* | Surinam Toad | Pipidae | Lima *et al.* 2007 |
| TESTUDINES | | | |
| *Chelus fimbriata* | Mata Mata | Chelidae | Gordo *et al.* 2009 |
| *Mesoclemmys raniceps* | Black-lined Toadhead Turtle | Chelidae | Gordo *et al.* 2009 |
| *Platemys platycephala* | Twist-neck Turtle | Chelidae | Gordo *et al.* 2009 |
| *Rhinoclemmys punctularia* | Spotted-legged Turtle | Geoemydidae | Gordo *et al.* 2009 |
| *Peltocephalus dumerilianus* | Big-headed Amazon River Turtle | Podocnemididae | Gordo *et al.* 2009 |
| *Podocemis expansa* | South American River Turtle | Podocnemididae | Gordo *et al.* 2009 |
| *Podocnemis erythrocephala* | Red-headed Amazon Side-necked Turtle | Podocnemididae | Gordo *et al.* 2009 |
| *Podocnemis sextuberculata* | Six-tubercled Amazon River Turtle, Amazon River Turtle | Podocnemididae | Gordo *et al.* 2009 |
| *Podocnemis unifilis* | Yellow-spotted Amazon River Turtle | Podocnemididae | Gordo *et al.* 2009 |
| *Chelonoidis carbonaria* | Red-footed Tortoise | Testudinidae | Gordo *et al.* 2009 |
| *Chelonoidis denticulata* | Yellow-footed Tortoise | Testudinidae | Gordo *et al.* 2009 |
| SQUAMATA | | | |
| *Hemidactylus mabouia* | Moreau's Tropical House Gecko | Gekkonidae | Gordo *et al.* 2009 |
| *Cercosaura ocellata* | Ocellated Tegu | Gymnophthalmidae | Gordo *et al.* 2009 |
| *Leposoma percarinatum* | Muller's Tegu | Gymnophthalmidae | Lima *et al.* 2007 |
| *Leposoma* sp. | | Gymnophthalmidae | Gordo *et al.* 2009 |
| *Iguana iguana* | Common Green Iguana | Iguanidae | Gordo *et al.* 2009 |
| *Thecadactylus rapicauda* | Turniptail Gecko | Phyllodactylidae | Lima *et al.* 2007 |
| *Anolis auratus* | Grass Anole | Polychrotidae | Lima *et al.* 2007 |
| *Anolis fuscoauratus* | Brown-eared Anole | Polychrotidae | Moraes 2008 |
| *Anolis nitens* | | Polychrotidae | Lima *et al.* 2007 |
| *Anolis punctatus* | Amazon Green Anole | Polychrotidae | Lima *et al.* 2007 |
| *Anolis* sp. | | Polychrotidae | Gordo *et al.* 2009 |
| *Polychrus marmoratus* | Many-colored Bush Anole | Polychrotidae | Gordo *et al.* 2009 |
| *Mabuya carvalhoi* | Carvalho's Mabuya | Scincidae | Gordo *et al.* 2009 |
| *Mabuya nigropunctata* | Black-Spotted Skink | Scincidae | Lima *et al.* 2007 |
| *Coleodactylus septentrionalis* | Ilha Maracá Gecko | Sphaerodactylidae | Moraes 2008 |
| *Coleodactylus* sp. | | Sphaerodactylidae | Gordo *et al.* 2009 |
| *Gonatodes humeralis* | Trinidad Gecko | Sphaerodactylidae | Lima *et al.* 2007 |
| *Ameiva ameiva* | Giant Ameiva | Teiidae | Lima *et al.* 2007 |
| *Cnemidophorus lemniscatus* | Rainbow Lizard | Teiidae | Lima *et al.* 2007 |
| *Crocodilurus amazonicus* | Crocodile Tegu | Teiidae | Gordo *et al.* 2009 |
| *Crocodilurus lacertinus* | Crocodile Tegu | Teiidae | Moraes 2008 |
| *Kentropyx altamazonica* | Cocha Whiptail | Teiidae | Lima *et al.* 2007 |
| *Kentropyx calcarata* | Striped Forest Whiptail | Teiidae | Lima *et al.* 2007 |
| *Kentropyx striata* | Kentropyx | Teiidae | Lima *et al.* 2007 |
| *Tupinambis teguixim* | Argentine Giant Tegu | Teiidae | Gordo *et al.* 2009 |
| *Plica umbra* | Blue-Lipped Tree Lizard | Tropiduridae | Lima *et al.* 2007 |
| *Uranoscodon superciliosus* | Diving Lizard | Tropiduridae | Lima *et al.* 2007 |
| *Typhlops reticulatus* | Reticulate Worm Snake | Typhlopidae | Gordo *et al.* 2009 |
| *Typhlops* sp. | Worm Snake | Typhlopidae | Lima *et al.* 2007 |

| SPECIES | VERNACULAR NAME | FAMILY | FIRST RECORD |
|---|---|---|---|
| *Anilius scytale* | Coral Cylinder Snakes | Aniliidae | Gordo *et al.* 2009 |
| *Corallus hortulanus* | Garden Tree Boa | Boidae | Lima *et al.* 2007 |
| *Epicrates cenchria* | Rainbow Boa | Boidae | Gordo *et al.* 2009 |
| *Eunectes murinus* | Green Anaconda | Boidae | ICMBio, 2014 |
| *Apostolepis* cf. *quinquelineata* | Guyana Burrowing Snake | Colubridae | Gordo *et al.* 2009 |
| *Atractus* cf. *major* | Big Ground Snake | Colubridae | Lima *et al.* 2007 |
| *Atractus* cf. *schach* | Schach's Ground Snake | Colubridae | Gordo *et al.* 2009 |
| *Atractus* cf. *torquatus* | Neckband Ground Snake | Colubridae | Gordo *et al.* 2009 |
| *Chironius* sp. | | Colubridae | Gordo *et al.* 2009 |
| *Dendrophidion dendrophis* | Olive Forest Racer | Colubridae | Gordo *et al.* 2009 |
| *Dipsas catesbyi* | Catesby's Snail-eater | Colubridae | Lima *et al.* 2007 |
| *Drepanoides anomalus* | Black-collared Snake | Colubridae | Gordo *et al.* 2009 |
| *Erythrolamprus aesculapii* | Aesculapian False Coral Snake | Colubridae | Lima *et al.* 2007 |
| *Helicops angulatus* | Brown-banded watersnake | Colubridae | Lima *et al.* 2007 |
| *Hydrops martii* | Amazon Water Snake | Colubridae | Gordo *et al.* 2009 |
| *Leptodeira annulata* | Banded Cat-eyed Snake | Colubridae | Lima *et al.* 2007 |
| *Leptophis ahaetulla* | (Giant) Parrot Snake | Colubridae | Lima *et al.* 2007 |
| *Liophis* cf. *typhlus* | Velvet Swampsnake | Colubridae | Gordo *et al.* 2009 |
| *Mastigodryas boddaerti* | Boddaert's Tropical Racer | Colubridae | Lima *et al.* 2007 |
| *Oxybelis fulgidus* | Green Vine Snake | Colubridae | Lima *et al.* 2007 |
| *Oxyrhopus melanogenys* | Tschudi's False Coral Snake | Colubridae | Lima *et al.* 2007 |
| *Philodryas viridissimus* | Common Green Racer | Colubridae | Gordo *et al.* 2009 |
| *Pseudoboa coronata* | Crowned False Boa | Colubridae | Gordo *et al.* 2009 |
| *Siphlophis cervinus* | Panama Spotted Night Snake | Colubridae | Lima *et al.* 2007 |
| *Siphlophis compressus* | Tropical Flat Snake | Colubridae | Lima *et al.* 2007 |
| *Micrurus averyi* | Black-headed Coral Snake | Elapidae | Lima *et al.* 2007 |
| *Micrurus surinamensis* | Aquatic Coral Snake | Elapidae | Lima *et al.* 2007 |
| *Bothrops atrox* | Common Lancehead | Viperidae | Lima *et al.* 2007 |
| CROCODYLA | | | |
| *Caiman crocodilus* | Common Caiman | Alligatoridae | Gordo *et al.* 2009 |
| *Melanosuchus niger* | Black Caiman | Alligatoridae | Gordo *et al.* 2009 |
| *Paleosuchus trigonatus* | Smooth-fronted Caiman | Alligatoridae | Gordo *et al.* 2009 |

## APPENDIX 5

Fish species recorded in Viruá National Park.

| SPECIES | FAMILY | ORDER | FIRST RECORD |
|---|---|---|---|
| CLASSE ACTINOPTERYGII | | | |
| *Belonion apodion* | Belonidae | Beloniformes | Ferreira *et al.* 2009 |
| *Potamorrhaphis guianensis* | Belonidae | Beloniformes | Ferreira *et al.* 2009 |
| *Acestrorhynchus falcatus* | Acestrorhynchidae | Characiformes | Vale 2009 |
| *Acestrorhynchus falcirostris* | Acestrorhynchidae | Characiformes | Ferreira *et al.* 2009 |
| *Acestrorhynchus grandoculis* | Acestrorhynchidae | Characiformes | Ferreira *et al.* 2009 |
| *Acestrorhynchus heterolepis* | Acestrorhynchidae | Characiformes | Ferreira *et al.* 2009 |
| *Acestrorhynchus microlepis* | Acestrorhynchidae | Characiformes | Ferreira *et al.* 2009 |
| *Acestrorhynchus minimus* | Acestrorhynchidae | Characiformes | Ferreira *et al.* 2009 |
| *Acestrorhynchus nasutus* | Acestrorhynchidae | Characiformes | Vale 2009 |
| *Acestrorhynchus* sp. | Acestrorhynchidae | Characiformes | Vale 2009 |
| *Chalceus macrolepidotus* | Alestidae | Characiformes | Ferreira *et al.* 2009 |
| *Anostomoides laticeps* | Anostomidae | Characiformes | Ferreira *et al.* 2009 |
| *Anostomus anostomus* | Anostomidae | Characiformes | Ferreira *et al.* 2009 |
| *Laemolyta fernandezi* | Anostomidae | Characiformes | Lemos 2009 |
| *Laemolyta garmani* | Anostomidae | Characiformes | Lemos 2009 |
| *Laemolyta proxima* | Anostomidae | Characiformes | Ferreira *et al.* 2009 |
| *Laemolyta taeniata* | Anostomidae | Characiformes | Lemos 2009 |
| *Leporinus agassizi* | Anostomidae | Characiformes | Ferreira *et al.* 2009 |
| *Leporinus falcipinnis* | Anostomidae | Characiformes | Ferreira *et al.* 2009 |
| *Leporinus fasciatus* | Anostomidae | Characiformes | Ferreira *et al.* 2009 |
| *Leporinus friderici* | Anostomidae | Characiformes | Vale 2009 |
| *Leporinus klausewitzi* | Anostomidae | Characiformes | Ferreira *et al.* 2009 |
| *Leporinus nigrotaeniatus* | Anostomidae | Characiformes | Ferreira *et al.* 2009 |
| *Leporinus* sp | Anostomidae | Characiformes | Lemos 2009 |
| *Pseudanos gracilis* | Anostomidae | Characiformes | Ferreira *et al.* 2009 |
| *Pseudanos trimaculatus* | Anostomidae | Characiformes | Ferreira *et al.* 2009 |
| *Schizodon fasciatus* | Anostomidae | Characiformes | Ferreira *et al.* 2009 |
| *Acestrocephalus ginesi* | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Agoniates halecinus* | Characidae | Characiformes | Lemos 2009 |
| *Aphyocharax alburnus* | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Aphyodite grammica* | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Aphyodite* sp. *"mancha umeral"* | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Axelrodia lindeae* | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Brittanichthys axelrodi* | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Brittanichthys myersi* | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Brycon amazonicus* | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Brycon falcatus* | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Brycon pesu* | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Bryconops affinis* | Characidae | Characiformes | Vale 2009 |
| *Bryconops alburnoides* | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Bryconops caudomaculatus* | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Bryconops giacopinii* | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Bryconops magoi* | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Catoprion mento* | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Charax* cf. *condei* | Characidae | Characiformes | Vale 2009 |
| *Charax* cf. *leticiae* | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Colossoma macropomum* | Characidae | Characiformes | Lemos 2009 |
| *Creagrutus zephyrus* | Characidae | Characiformes | Ferreira *et al.* 2009 |

| SPECIES | FAMILY | ORDER | FIRST RECORD |
|---|---|---|---|
| *Ctenobrycon hauxwellianus* | Characidae | Characiformes | Vale 2009 |
| *Exodon paradoxus* | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Galeocharax* cf. *gulo* | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Gnathocharax steindachneri* | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Hemigrammus* aff. *cupreus* | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Hemigrammus* aff. *iota* | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Hemigrammus* aff. *melanochrous* | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Hemigrammus* aff. *vorderwinkleri* | Characidae | Characiformes | Vale 2009 |
| *Hemigrammus analis* | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Hemigrammus bellotii* | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Hemigrammus bleheri* | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Hemigrammus coeruleus* | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Hemigrammus cylindriformis* | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Hemigrammus guianensis* | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Hemigrammus levis* | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Hemigrammus ocellifer* | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Hemigrammus* sp. *"fumaça"* | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Hemigrammus stictus* | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Hemigrammus vorderwinkleri* | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Hoplocharax goethei* | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Hyphessobrycon* aff. *agulha* | Characidae | Characiformes | Vale 2009 |
| *Hyphessobrycon* aff. *bentosi* | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Hyphessobrycon* aff. *heterorhabdus* | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Hyphessobrycon* aff. *minimus* | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Hyphessobrycon* aff. *tukunai* | Characidae | Characiformes | Vale 2009 |
| *Hyphessobrycon bentosi* | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Hyphessobrycon copelandi* | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Hyphessobrycon erythrostigma* | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Hyphessobrycon simulans* | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Hyphessobrycon* sp. | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Hyphessobrycon* sp. *"muitos dentes"* | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Hyphessobrycon* sp. *"prata"* | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Iguanodectes geisleri* | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Iguanodectes gracilis* | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Iguanodectes* sp.*ilurus* | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Jupiaba essequibensis* | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Jupiaba scologaster* | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Knodus* cf. *heterestes* | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Knodus orteguasae* | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Metynnis argenteus* | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Metynnis hypsauchen* | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Metynnis lippincottianus* | Characidae | Characiformes | Lemos 2009 |
| *Metynnis* sp. | Characidae | Characiformes | Vale 2009 |
| *Microschemobrycon casiquiare* | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Microschemobrycon* cf. *callops* | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Microschemobrycon melanotus* | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Microschemobrycon* sp. *"curto"* | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Moenkhausia browni* | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Moenkhausia ceros* | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Moenkhausia* cf. *lepidura* | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Moenkhausia collettii* | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Moenkhausia copei* | Characidae | Characiformes | Ferreira *et al.* 2009 |

| SPECIES | FAMILY | ORDER | FIRST RECORD |
|---|---|---|---|
| *Moenkhausia cotinho* | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Moenkhausia crysargyrea* | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Moenkhausia dichroura* | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Moenkhausia gracilima* | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Moenkhausia hemigrammoides* | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Moenkhausia jamesi* | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Moenkhausia megalops* | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Myleus asterias* | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Myleus schomburgkii* | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Myleus schomoburgkii* | Characidae | Characiformes | Lemos 2009 |
| *Myleus setiger* | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Myleus torquatus* | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Myloplus rubripinnis* | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Mylosoma aureum* | Characidae | Characiformes | Lemos 2009 |
| *Mylosoma duriventre* | Characidae | Characiformes | Lemos 2009 |
| *Oxybrycon parvulus* | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Parapristella georgiae* | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Phenacogaster* cf. *megalostictus* | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Phenacogaster microstictus* | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Piaractus brachypomus* | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Poptella compressa* | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Priocharax ariel* | Characidae | Characiformes | Vale 2009 |
| *Pristobrycon striolatus* | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Pygocentrus nattereri* | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Pygopristis denticulata* | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Roeboides affinis* | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Roeboides* sp. | Characidae | Characiformes | Lemos 2009 |
| *Serrasalmus altis*sp.*inis* | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Serrasalmus* cf. *rhombeus (faixa caudal* | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Serrasalmus compressus* | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Serrasalmus eigenmanni* | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Serrasalmus gouldingi* | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Serrasalmus hastatus* | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Serrasalmus humeralis* | Characidae | Characiformes | Lemos 2009 |
| *Serrasalmus rhombeus* | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Serrasalmus serrulatus* | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Tetragonopterus chalceus* | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Tometes* sp. | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Triportheus* aff. *albus* | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Triportheus albus* | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Triportheus angulatus* | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Triportheus auritus* | Characidae | Characiformes | Lemos 2009 |
| *Triportheus culter* | Characidae | Characiformes | Lemos 2009 |
| *Tyttobrycon* sp. | Characidae | Characiformes | Ferreira *et al.* 2009 |
| *Caenotropus labyrinthicus* | Chilodontidae | Characiformes | Lemos 2009 |
| *Chilodus punctatus* | Chilodontidae | Characiformes | Ferreira *et al.* 2009 |
| *Ammocryptocharax elegans* | Crenuchidae | Characiformes | Ferreira *et al.* 2009 |
| *Ammocryptocharax minutus* | Crenuchidae | Characiformes | Ferreira *et al.* 2009 |
| *Characidium* aff. *pellucidum* | Crenuchidae | Characiformes | Ferreira *et al.* 2009 |
| *Characidium* aff. *pteroides* | Crenuchidae | Characiformes | Ferreira *et al.* 2009 |
| *Characidium* cf. *zebra* | Crenuchidae | Characiformes | Ferreira *et al.* 2009 |
| *Crenuchus* sp.*ilurus* | Crenuchidae | Characiformes | Ferreira *et al.* 2009 |

| SPECIES | FAMILY | ORDER | FIRST RECORD |
|---|---|---|---|
| *Elachocharax junki* | Crenuchidae | Characiformes | Ferreira *et al.* 2009 |
| *Elachocharax pulcher* | Crenuchidae | Characiformes | Ferreira *et al.* 2009 |
| *Melanocharacidium dis*p.*ilomma* | Crenuchidae | Characiformes | Ferreira *et al.* 2009 |
| *Melanocharacidium pectorale* | Crenuchidae | Characiformes | Ferreira *et al.* 2009 |
| *Melanocharacidium* sp. | Crenuchidae | Characiformes | Ferreira *et al.* 2009 |
| *Microcharacidium* sp. | Crenuchidae | Characiformes | Ferreira *et al.* 2009 |
| *Microcharacidium weitzmani* | Crenuchidae | Characiformes | Ferreira *et al.* 2009 |
| *Odontocharacidium aphanes* | Crenuchidae | Characiformes | Ferreira *et al.* 2009 |
| *Poecilocharax weitzmani* | Crenuchidae | Characiformes | Ferreira *et al.* 2009 |
| *Boulengerella cuvieri* | Ctenoluciidae | Characiformes | Ferreira *et al.* 2009 |
| *Boulengerella lateristriga* | Ctenoluciidae | Characiformes | Ferreira *et al.* 2009 |
| *Boulengerella lucius* | Ctenoluciidae | Characiformes | Ferreira *et al.* 2009 |
| *Boulengerella maculata* | Ctenoluciidae | Characiformes | Ferreira *et al.* 2009 |
| *Curimata cisandina* | Curimatidae | Characiformes | Lemos 2009 |
| *Curimata inornata* | Curimatidae | Characiformes | Ferreira *et al.* 2009 |
| *Curimata knerii* | Curimatidae | Characiformes | Lemos 2009 |
| *Curimata ocellata* | Curimatidae | Characiformes | Ferreira *et al.* 2009 |
| *Curimata roseni* | Curimatidae | Characiformes | Ferreira *et al.* 2009 |
| *Curimata vittata* | Curimatidae | Characiformes | Ferreira *et al.* 2009 |
| *Curimatella alburna* | Curimatidae | Characiformes | Ferreira *et al.* 2009 |
| *Curimatella immaculata* | Curimatidae | Characiformes | Ferreira *et al.* 2009 |
| *Curimatopsis crypticus* | Curimatidae | Characiformes | Ferreira *et al.* 2009 |
| *Curimatopsis evelynae* | Curimatidae | Characiformes | Ferreira *et al.* 2009 |
| *Curimatopsis macrolepis* | Curimatidae | Characiformes | Ferreira *et al.* 2009 |
| *Cyphocharax abramoides* | Curimatidae | Characiformes | Ferreira *et al.* 2009 |
| *Cyphocharax plumbeus* | Curimatidae | Characiformes | Ferreira *et al.* 2009 |
| *Cyphocharax* sp.*ilurus* | Curimatidae | Characiformes | Ferreira *et al.* 2009 |
| *Potamorhina latior* | Curimatidae | Characiformes | Ferreira *et al.* 2009 |
| *Psectrogaster amazonica* | Curimatidae | Characiformes | Ferreira *et al.* 2009 |
| *Psectrogaster ciliata* | Curimatidae | Characiformes | Lemos 2009 |
| *Psectrogaster essequibensis* | Curimatidae | Characiformes | Ferreira *et al.* 2009 |
| *Steindachnerina planiventris* | Curimatidae | Characiformes | Ferreira *et al.* 2009 |
| *Cynodon gibbus* | Cynodontidae | Characiformes | Lemos 2009 |
| *Cynodon septenarius* | Cynodontidae | Characiformes | Ferreira *et al.* 2009 |
| *Hydrolycus armatus* | Cynodontidae | Characiformes | Ferreira *et al.* 2009 |
| *Hydrolycus scomberoides* | Cynodontidae | Characiformes | Ferreira *et al.* 2009 |
| *Hydrolycus tatauaia* | Cynodontidae | Characiformes | Ferreira *et al.* 2009 |
| *Hydrolycus wallacei* | Cynodontidae | Characiformes | Ferreira *et al.* 2009 |
| *Rhaphiodon vulpinus* | Cynodontidae | Characiformes | Ferreira *et al.* 2009 |
| *Roestes olgiviei* | Cynodontidae | Characiformes | Ferreira *et al.* 2009 |
| *Erythrinus erythrinus* | Erythrinidae | Characiformes | Ferreira *et al.* 2009 |
| *Hoplerythrinus unitaeniatus* | Erythrinidae | Characiformes | Ferreira *et al.* 2009 |
| *Hoplias malabaricus* | Erythrinidae | Characiformes | Ferreira *et al.* 2009 |
| *Hoplias* sp. *"macoari"* | Erythrinidae | Characiformes | Ferreira *et al.* 2009 |
| *Carnegiella strigata* | Gasteropelecidae | Characiformes | Ferreira *et al.* 2009 |
| *Anodus elongatus* | Hemiodontidae | Characiformes | Ferreira *et al.* 2009 |
| *Anodus* sp. | Hemiodontidae | Characiformes | Ferreira *et al.* 2009 |
| *Argonectes longiceps* | Hemiodontidae | Characiformes | Ferreira *et al.* 2009 |
| *Bivibranchia fowleri* | Hemiodontidae | Characiformes | Ferreira *et al.* 2009 |
| *Hemiodus argenteus* | Hemiodontidae | Characiformes | Ferreira *et al.* 2009 |
| *Hemiodus goeldii* | Hemiodontidae | Characiformes | Lemos 2009 |
| *Hemiodus gracilis* | Hemiodontidae | Characiformes | Lemos 2009 |

| SPECIES | FAMILY | ORDER | FIRST RECORD |
|---|---|---|---|
| *Hemiodus semitaeniatus* | Hemiodontidae | Characiformes | Ferreira *et al.* 2009 |
| *Hemiodus* sp. *n. "rabo de fogo"* | Hemiodontidae | Characiformes | Ferreira *et al.* 2009 |
| *Hemiodus unimaculatus* | Hemiodontidae | Characiformes | Ferreira *et al.* 2009 |
| *Copella meinkeni* | Lebiasinidae | Characiformes | Ferreira *et al.* 2009 |
| *Copella nigrofasciata* | Lebiasinidae | Characiformes | Ferreira *et al.* 2009 |
| *Nannostomus digrammus* | Lebiasinidae | Characiformes | Ferreira *et al.* 2009 |
| *Nannostomus eques* | Lebiasinidae | Characiformes | Ferreira *et al.* 2009 |
| *Nannostomus marginatus* | Lebiasinidae | Characiformes | Ferreira *et al.* 2009 |
| *Nannostomus trifasciatus* | Lebiasinidae | Characiformes | Ferreira *et al.* 2009 |
| *Nannostomus unifasciatus* | Lebiasinidae | Characiformes | Ferreira *et al.* 2009 |
| *Pyrrhulina stoli* | Lebiasinidae | Characiformes | Ferreira *et al.* 2009 |
| *Prochilodus rubrotaeniatus* | Prochilodontidae | Characiformes | Ferreira *et al.* 2009 |
| *Semaprochilodus insignis* | Prochilodontidae | Characiformes | Ferreira *et al.* 2009 |
| *Amazon*sp.*rattus scintilla* | Engraulididae | Clupeiformes | Ferreira *et al.* 2009 |
| *Anchoviella carrikeri* | Engraulididae | Clupeiformes | Ferreira *et al.* 2009 |
| *Anchoviella* sp.*"maxila curta"* | Engraulididae | Clupeiformes | Ferreira *et al.* 2009 |
| *Lycengraulis batesii* | Engraulididae | Clupeiformes | Ferreira *et al.* 2009 |
| *Pellona castelnaeana* | Pristigasteridae | Clupeiformes | Ferreira *et al.* 2009 |
| *Pellona flavipinnis* | Pristigasteridae | Clupeiformes | Ferreira *et al.* 2009 |
| *Pristigaster cayana* | Pristigasteridae | Clupeiformes | Ferreira *et al.* 2009 |
| *Fluviphylax simplex* | Poeciliidae | Cyprinodontiformes | Ferreira *et al.* 2009 |
| *Fluviphylax* sp. | Poeciliidae | Cyprinodontiformes | Vale 2009 |
| *Moema portugali* | Rivulidae | Cyprinodontiformes | Ferreira *et al.* 2009 |
| *Rivulus obscurus* | Rivulidae | Cyprinodontiformes | Ferreira *et al.* 2009 |
| *Adontosternarchus clarkae* | Apteronotidae | Gymnotiformes | Ferreira *et al.* 2009 |
| *Apteronotus albifrons* | Apteronotidae | Gymnotiformes | Ferreira *et al.* 2009 |
| *Pariosternarchus* sp. | Apteronotidae | Gymnotiformes | Ferreira *et al.* 2009 |
| *Platyurosternarchus macrostomus* | Apteronotidae | Gymnotiformes | Ferreira *et al.* 2009 |
| *Porotergus* cf. *compsus* | Apteronotidae | Gymnotiformes | Ferreira *et al.* 2009 |
| *Sternarchella terminalis* | Apteronotidae | Gymnotiformes | Ferreira *et al.* 2009 |
| *Sternarchogiton porcinum* | Apteronotidae | Gymnotiformes | Ferreira *et al.* 2009 |
| *Sternarchorhamphus muelleri* | Apteronotidae | Gymnotiformes | Ferreira *et al.* 2009 |
| *Sternarchorhynchus mormyrus* | Apteronotidae | Gymnotiformes | Ferreira *et al.* 2009 |
| *Electrophorus electricus* | Gymnotidae | Gymnotiformes | Ferreira *et al.* 2009 |
| *Gymnotus* cf. *carapo* | Gymnotidae | Gymnotiformes | Vale 2009 |
| *Gymnotus coropinae* | Gymnotidae | Gymnotiformes | Ferreira *et al.* 2009 |
| *Gymnotus* sp. | Gymnotidae | Gymnotiformes | Vale 2009 |
| *Brachyhypopomus* aff. *diazi* | Hypopomidae | Gymnotiformes | Vale 2009 |
| *Brachyhypopomus bullocki* | Hypopomidae | Gymnotiformes | Vale 2009 |
| *Brachyhypopomus* cf. *beebei* | Hypopomidae | Gymnotiformes | Ferreira *et al.* 2009 |
| *Brachyhypopomus* sp. *"base da anal escura"* | Hypopomidae | Gymnotiformes | Ferreira *et al.* 2009 |
| *Brachyhypopomus* sp. *n. "ro"* | Hypopomidae | Gymnotiformes | Ferreira *et al.* 2009 |
| *Brachyhypopomus* sp. *n. "wa"* | Hypopomidae | Gymnotiformes | Ferreira *et al.* 2009 |
| *Hypopygus lepturus* | Hypopomidae | Gymnotiformes | Ferreira *et al.* 2009 |
| *Hypopygus* sp. *n. "escuro"* | Hypopomidae | Gymnotiformes | Ferreira *et al.* 2009 |
| *Microsternarchus bilineatus* | Hypopomidae | Gymnotiformes | Ferreira *et al.* 2009 |
| *Steatogenys duidae* | Hypopomidae | Gymnotiformes | Ferreira *et al.* 2009 |
| *Stegostenopus cryptogenes* | Hypopomidae | Gymnotiformes | Ferreira *et al.* 2009 |
| *Gymnorhamphichthys hypostomus* | Rhamphichthyidae | Gymnotiformes | Ferreira *et al.* 2009 |
| *Gymnorhamphichthys petiti* | Rhamphichthyidae | Gymnotiformes | Ferreira *et al.* 2009 |
| *Distocyclus conirostris* | Sternopygidae | Gymnotiformes | Ferreira *et al.* 2009 |
| *Eigenmannia* cf. *trilineata* | Sternopygidae | Gymnotiformes | Ferreira *et al.* 2009 |

| SPECIES | FAMILY | ORDER | FIRST RECORD |
|---|---|---|---|
| *Eigenmannia limbata* | Sternopygidae | Gymnotiformes | Ferreira *et al.* 2009 |
| *Eigenmannia macrops* | Sternopygidae | Gymnotiformes | Ferreira *et al.* 2009 |
| *Rhabdolichops caviceps* | Sternopygidae | Gymnotiformes | Ferreira *et al.* 2009 |
| *Rhabdolichops electrogrammus* | Sternopygidae | Gymnotiformes | Ferreira *et al.* 2009 |
| *Rhabdolichops stewarti* | Sternopygidae | Gymnotiformes | Ferreira *et al.* 2009 |
| *Rhabdolichops troscheli* | Sternopygidae | Gymnotiformes | Ferreira *et al.* 2009 |
| *Sternopygus macrurus* | Sternopygidae | Gymnotiformes | Ferreira *et al.* 2009 |
| *Arapaima gigas* | Arapaimidae | Osteoglossiformes | IBAMA 2006 |
| *Osteoglossum bicirrhosum* | Osteoglossidae | Osteoglossiformes | Ferreira *et al.* 2009 |
| *Osteoglossum ferreirai* | Osteoglossidae | Osteoglossiformes | Ferreira *et al.* 2009 |
| *Acarichthys heckelii* | Cichlidae | Perciformes | Ferreira *et al.* 2009 |
| *Acaronia nassa* | Cichlidae | Perciformes | Ferreira *et al.* 2009 |
| *Acaronia vultuosa* | Cichlidae | Perciformes | Ferreira *et al.* 2009 |
| *Aequidens* aff. *tetramerus* | Cichlidae | Perciformes | Vale 2009 |
| *Aequidens pallidus* | Cichlidae | Perciformes | Ferreira *et al.* 2009 |
| *Aequidens* sp. | Cichlidae | Perciformes | Vale 2009 |
| *Apistogramma* aff. *gibbiceps* | Cichlidae | Perciformes | Vale 2009 |
| *Apistogramma gephyra* | Cichlidae | Perciformes | Ferreira *et al.* 2009 |
| *Apistogramma gibbiceps* | Cichlidae | Perciformes | Ferreira *et al.* 2009 |
| *Apistogramma hippolytae* | Cichlidae | Perciformes | Ferreira *et al.* 2009 |
| *Apistogramma mendezi* | Cichlidae | Perciformes | Ferreira *et al.* 2009 |
| *Apistogramma pulchra* | Cichlidae | Perciformes | Ferreira *et al.* 2009 |
| *Apistogramma rupununi* | Cichlidae | Perciformes | Ferreira *et al.* 2009 |
| *Apistogramma* sp. | Cichlidae | Perciformes | Vale 2009 |
| *Apistogramma* sp. *"courtship* sp.*ot"* | Cichlidae | Perciformes | Ferreira *et al.* 2009 |
| *Biotodoma cupido* | Cichlidae | Perciformes | Ferreira *et al.* 2009 |
| *Biotoecus opercularis* | Cichlidae | Perciformes | Ferreira *et al.* 2009 |
| *Chaetobranchus flavescens* | Cichlidae | Perciformes | Ferreira *et al.* 2009 |
| *Cichla ocellaris* | Cichlidae | Perciformes | Ferreira *et al.* 2009 |
| *Cichla orinocensis* | Cichlidae | Perciformes | Ferreira *et al.* 2009 |
| *Cichla temensis* | Cichlidae | Perciformes | Lemos 2009 |
| *Cichlassoma bimaculatum* | Cichlidae | Perciformes | Vale 2009 |
| *Crenicara punctulatum* | Cichlidae | Perciformes | Vale 2009 |
| *Crenicichla johanna* | Cichlidae | Perciformes | Ferreira *et al.* 2009 |
| *Crenicichla lenticulata* | Cichlidae | Perciformes | Ferreira *et al.* 2009 |
| *Crenicichla regani* | Cichlidae | Perciformes | Ferreira *et al.* 2009 |
| *Crenicichla virgatula* | Cichlidae | Perciformes | Ferreira *et al.* 2009 |
| *Crenicichla wallacii* | Cichlidae | Perciformes | Ferreira *et al.* 2009 |
| *Dicrossus maculatus* | Cichlidae | Perciformes | Ferreira *et al.* 2009 |
| *Geophagus altifrons* | Cichlidae | Perciformes | Ferreira *et al.* 2009 |
| *Geophagus proximus* | Cichlidae | Perciformes | Ferreira *et al.* 2009 |
| *Hoplarchus psittacus* | Cichlidae | Perciformes | Ferreira *et al.* 2009 |
| *Hypselecara coryphaenoides* | Cichlidae | Perciformes | Ferreira *et al.* 2009 |
| *Laetacara* sp. | Cichlidae | Perciformes | Ferreira *et al.* 2009 |
| *Mesonauta insignis* | Cichlidae | Perciformes | Ferreira *et al.* 2009 |
| *Pterophylum scalare* | Cichlidae | Perciformes | Ferreira *et al.* 2009 |
| *Satanoperca jurupari* | Cichlidae | Perciformes | Ferreira *et al.* 2009 |
| *Satanoperca lilith* | Cichlidae | Perciformes | Ferreira *et al.* 2009 |
| *Taeniacara candidi* | Cichlidae | Perciformes | Ferreira *et al.* 2009 |
| *Microphilypnus amazonicus* | Gobiidae | Perciformes | Ferreira *et al.* 2009 |
| *Microphilypnus macrostoma* | Gobiidae | Perciformes | Ferreira *et al.* 2009 |
| *Monocirrhus polyacanthus* | Polycentridae | Perciformes | Ferreira *et al.* 2009 |

| SPECIES | FAMILY | ORDER | FIRST RECORD |
|---|---|---|---|
| *Pachyurus calhamazon* | Sciaenidae | Perciformes | Ferreira *et al.* 2009 |
| *Pachyurus gabrielensis* | Sciaenidae | Perciformes | Ferreira *et al.* 2009 |
| *Pachyurus junki* | Sciaenidae | Perciformes | Ferreira *et al.* 2009 |
| *Pachyurus paucirastrus* | Sciaenidae | Perciformes | Ferreira *et al.* 2009 |
| *Pachyurus schomburgkii* | Sciaenidae | Perciformes | Ferreira *et al.* 2009 |
| *Pachyurus* sp. | Sciaenidae | Perciformes | Lemos 2009 |
| *Plagioscion auratus* | Sciaenidae | Perciformes | Ferreira *et al.* 2009 |
| *Plagioscion squamosissimus* | Sciaenidae | Perciformes | Ferreira *et al.* 2009 |
| *Apionichthys finis* | Achiridae | Pleuronectiformes | Ferreira *et al.* 2009 |
| *Hypoclinemus mentalis* | Achiridae | Pleuronectiformes | Ferreira *et al.* 2009 |
| *Amaralia hypsiura* | Aspredinidae | Siluriformes | Ferreira *et al.* 2009 |
| *Bunocephalus coracoideus* | Aspredinidae | Siluriformes | Ferreira *et al.* 2009 |
| *Bunocephalus verrucosus* | Aspredinidae | Siluriformes | Ferreira *et al.* 2009 |
| *Pterobunocephalus depressus* | Aspredinidae | Siluriformes | Ferreira *et al.* 2009 |
| *Ageneiosus atronasus* | Auchenipteridae | Siluriformes | Ferreira *et al.* 2009 |
| *Ageneiosus inermis* | Auchenipteridae | Siluriformes | Ferreira *et al.* 2009 |
| *Ageneiosus marmoratus* | Auchenipteridae | Siluriformes | Lemos 2009 |
| *Ageneiosus n.*sp. | Auchenipteridae | Siluriformes | Lemos 2009 |
| *Ageneiosus piperatus* | Auchenipteridae | Siluriformes | Lemos 2009 |
| *Ageneiosus polystictus* | Auchenipteridae | Siluriformes | Ferreira *et al.* 2009 |
| *Ageneiosus* sp. *n. "vittatus"* | Auchenipteridae | Siluriformes | Ferreira *et al.* 2009 |
| *Ageneiosus ucayalensis* | Auchenipteridae | Siluriformes | Ferreira *et al.* 2009 |
| *Auchenipterichthys coracoideus* | Auchenipteridae | Siluriformes | Ferreira *et al.* 2009 |
| *Auchenipterichthys longimanus* | Auchenipteridae | Siluriformes | Ferreira *et al.* 2009 |
| *Auchenipterichthys punctatus* | Auchenipteridae | Siluriformes | Ferreira *et al.* 2009 |
| *Auchenipterus ambyiacus* | Auchenipteridae | Siluriformes | Lemos 2009 |
| *Auchenipterus brachyurus* | Auchenipteridae | Siluriformes | Ferreira *et al.* 2009 |
| *Auchenipterus britskii* | Auchenipteridae | Siluriformes | Lemos 2009 |
| *Auchenipterus nuchalis* | Auchenipteridae | Siluriformes | Lemos 2009 |
| *Centromochlus altae* | Auchenipteridae | Siluriformes | Ferreira *et al.* 2009 |
| *Centromochlus heckelii* | Auchenipteridae | Siluriformes | Ferreira *et al.* 2009 |
| *Centromochlus macracanthus* | Auchenipteridae | Siluriformes | Ferreira *et al.* 2009 |
| *Centromochlus* sp. | Auchenipteridae | Siluriformes | Vale 2009 |
| *Parauchenipterus galeatus* | Auchenipteridae | Siluriformes | Ferreira *et al.* 2009 |
| *Parauchenipterus* sp. *n. "cabeça chata"* | Auchenipteridae | Siluriformes | Vale 2009 |
| *Parauchenipterus* sp. *n. "placa larga"* | Auchenipteridae | Siluriformes | Ferreira *et al.* 2009 |
| *Tatia* aff. *strigata* | Auchenipteridae | Siluriformes | Ferreira *et al.* 2009 |
| *Tatia gyrina* | Auchenipteridae | Siluriformes | Ferreira *et al.* 2009 |
| *Tatia intermedia* | Auchenipteridae | Siluriformes | Ferreira *et al.* 2009 |
| *Tatia nigra* | Auchenipteridae | Siluriformes | Ferreira *et al.* 2009 |
| *Tatia* sp. | Auchenipteridae | Siluriformes | Ferreira *et al.* 2009 |
| *Tatia* sp. *"pedúnculo alto"* | Auchenipteridae | Siluriformes | Ferreira *et al.* 2009 |
| *Tatia* sp. *n.* aff. *strigata* | Auchenipteridae | Siluriformes | Ferreira *et al.* 2009 |
| *Tatia strigata* | Auchenipteridae | Siluriformes | Ferreira *et al.* 2009 |
| *Tetranematichthys quadrifilis* | Auchenipteridae | Siluriformes | Lemos 2009 |
| *Tetranematichthys wallacei* | Auchenipteridae | Siluriformes | Ferreira *et al.* 2009 |
| *Trachelyichthys decaradiatus* | Auchenipteridae | Siluriformes | Ferreira *et al.* 2009 |
| *Trachelyopterichthys taeniatus* | Auchenipteridae | Siluriformes | Ferreira *et al.* 2009 |
| *Trachelyopterus galeatus* | Auchenipteridae | Siluriformes | Lemos 2009 |
| *Trachelyopterus* sp. | Auchenipteridae | Siluriformes | Vale 2009 |
| *Trachycorystes* sp. | Auchenipteridae | Siluriformes | Vale 2009 |
| *Trachycorystes trachycorystes* | Auchenipteridae | Siluriformes | Ferreira *et al.* 2009 |

| SPECIES | FAMILY | ORDER | FIRST RECORD |
|---|---|---|---|
| *Asp.idoras* sp. | Callichthyidae | Siluriformes | Ferreira *et al.* 2009 |
| *Callichthys callichthys* | Callichthyidae | Siluriformes | Ferreira *et al.* 2009 |
| *Corydoras* aff. *melanistius* | Callichthyidae | Siluriformes | Ferreira *et al.* 2009 |
| *Corydoras melanistius* | Callichthyidae | Siluriformes | Vale 2009 |
| *Megalechis personata* | Callichthyidae | Siluriformes | Ferreira *et al.* 2009 |
| *Megalechis thoracata* | Callichthyidae | Siluriformes | Ferreira *et al.* 2009 |
| *Cetopsidium morenoi* | Cetopsidae | Siluriformes | Ferreira *et al.* 2009 |
| *Cetopsidium pemon* | Cetopsidae | Siluriformes | Ferreira *et al.* 2009 |
| *Helogenes marmoratus* | Cetopsidae | Siluriformes | Ferreira *et al.* 2009 |
| *Acanthodoras cataphractus* | Doradidae | Siluriformes | Ferreira *et al.* 2009 |
| *Acanthodoras* sp.*inosissimus* | Doradidae | Siluriformes | Ferreira *et al.* 2009 |
| *Amblydoras affinis* | Doradidae | Siluriformes | Ferreira *et al.* 2009 |
| *Amblydoras* sp. | Doradidae | Siluriformes | Vale 2009 |
| *Anadoras regani* | Doradidae | Siluriformes | Lemos 2009 |
| *Anduzedoras oxyrhynchus* | Doradidae | Siluriformes | Ferreira *et al.* 2009 |
| *Astrodoras asterifrons* | Doradidae | Siluriformes | Lemos 2009 |
| *Doras carinatus* | Doradidae | Siluriformes | Lemos 2009 |
| *Doras microstomus* | Doradidae | Siluriformes | Ferreira *et al.* 2009 |
| *Doras phyzakion* | Doradidae | Siluriformes | Ferreira *et al.* 2009 |
| *Doras* sp. *"pintas na caudal"* | Doradidae | Siluriformes | Ferreira *et al.* 2009 |
| *Doras* sp. *"sem mancha"* | Doradidae | Siluriformes | Ferreira *et al.* 2009 |
| *Hemidoras stenopeltis* | Doradidae | Siluriformes | Ferreira *et al.* 2009 |
| *Leptodoras cataniai* | Doradidae | Siluriformes | Ferreira *et al.* 2009 |
| *Leptodoras hasemani* | Doradidae | Siluriformes | Ferreira *et al.* 2009 |
| *Leptodoras linnellii* | Doradidae | Siluriformes | Ferreira *et al.* 2009 |
| *Leptodoras praelongus* | Doradidae | Siluriformes | Ferreira *et al.* 2009 |
| *Leptodoras* sp. | Doradidae | Siluriformes | Lemos 2009 |
| *Megalodoras uranoscopus* | Doradidae | Siluriformes | Ferreira *et al.* 2009 |
| *Nemadoras elongatus* | Doradidae | Siluriformes | Ferreira *et al.* 2009 |
| *Nemadoras hemipeltis* | Doradidae | Siluriformes | Lemos 2009 |
| *Nemadoras humeralis* | Doradidae | Siluriformes | Lemos 2009 |
| *Nemadoras trimaculatus* | Doradidae | Siluriformes | Ferreira *et al.* 2009 |
| *Opsodoras ternetzi* | Doradidae | Siluriformes | Ferreira *et al.* 2009 |
| *Oxydoras eigenmanni* | Doradidae | Siluriformes | Ferreira *et al.* 2009 |
| *Oxydoras niger* | Doradidae | Siluriformes | Ferreira *et al.* 2009 |
| *Physopyxis ananas* | Doradidae | Siluriformes | Ferreira *et al.* 2009 |
| *Physopyxis cristata* | Doradidae | Siluriformes | Ferreira *et al.* 2009 |
| *Physopyxis lyra* | Doradidae | Siluriformes | Ferreira *et al.* 2009 |
| *Physopyxis* sp. | Doradidae | Siluriformes | Vale 2009 |
| *Platydoras costatus* | Doradidae | Siluriformes | Lemos 2009 |
| *Platydoras hancockii* | Doradidae | Siluriformes | Ferreira *et al.* 2009 |
| *Pterodoras rivasi* | Doradidae | Siluriformes | Lemos 2009 |
| *Rhinodoras armbrusteri* | Doradidae | Siluriformes | Ferreira *et al.* 2009 |
| *Rhynchodoras woodsi* | Doradidae | Siluriformes | Ferreira *et al.* 2009 |
| *Scorpiodoras heckelii* | Doradidae | Siluriformes | Ferreira *et al.* 2009 |
| *Trachydoras brevis* | Doradidae | Siluriformes | Ferreira *et al.* 2009 |
| *Trachydoras* cf. *microstomus* | Doradidae | Siluriformes | Ferreira *et al.* 2009 |
| *Trachydoras nattereri* | Doradidae | Siluriformes | Ferreira *et al.* 2009 |
| *Trachydoras* sp. *"mancha dorsal"* | Doradidae | Siluriformes | Ferreira *et al.* 2009 |
| *Brachyrhamdia heteropleura* | Heptapteridae | Siluriformes | Ferreira *et al.* 2009 |
| *Gladioglanis conquistador* | Heptapteridae | Siluriformes | Ferreira *et al.* 2009 |
| *Imparfinis* sp. | Heptapteridae | Siluriformes | Ferreira *et al.* 2009 |

| SPECIES | FAMILY | ORDER | FIRST RECORD |
|---|---|---|---|
| *Mastiglanis* sp. | Heptapteridae | Siluriformes | Ferreira *et al.* 2009 |
| *Nemuroglanis pauciradiatus* | Heptapteridae | Siluriformes | Ferreira *et al.* 2009 |
| *Nemuroglanis* sp. *n.* | Heptapteridae | Siluriformes | Ferreira *et al.* 2009 |
| *Phenacorhamdia* sp. | Heptapteridae | Siluriformes | Ferreira *et al.* 2009 |
| *Pimelodella cristata* | Heptapteridae | Siluriformes | Ferreira *et al.* 2009 |
| *Pimelodella megalops* | Heptapteridae | Siluriformes | Ferreira *et al.* 2009 |
| *Rhamdia laukidi* | Heptapteridae | Siluriformes | Vale 2009 |
| *Rhamdia* sp. | Heptapteridae | Siluriformes | Ferreira *et al.* 2009 |
| *Phreatobius* sp. *"anapixi"* | Incertae sedis | Siluriformes | Ferreira *et al.* 2009 |
| *Phreatobius* sp. *"viruá"* | Incertae sedis | Siluriformes | Ferreira *et al.* 2009 |
| *Acestridium discus* | Loricariidae | Siluriformes | Ferreira *et al.* 2009 |
| *Ancistrus* sp. *"preto"* | Loricariidae | Siluriformes | Ferreira *et al.* 2009 |
| *Ancistrus* sp. *"rio branco"* | Loricariidae | Siluriformes | Ferreira *et al.* 2009 |
| *Ancistrus* sp. *"vermelho"* | Loricariidae | Siluriformes | Ferreira *et al.* 2009 |
| *Dekeyseria scaphyrhyncha* | Loricariidae | Siluriformes | Ferreira *et al.* 2009 |
| *Farlowella oxyrrhyncha* | Loricariidae | Siluriformes | Ferreira *et al.* 2009 |
| *Hemiodontichthys acipenserinus* | Loricariidae | Siluriformes | Ferreira *et al.* 2009 |
| *Hypoptopoma gulare* | Loricariidae | Siluriformes | Ferreira *et al.* 2009 |
| *Hypoptopoma thoracatum* | Loricariidae | Siluriformes | Ferreira *et al.* 2009 |
| *Hypostomus carinatus* | Loricariidae | Siluriformes | Ferreira *et al.* 2009 |
| *Hypostomus hemicochliodon* | Loricariidae | Siluriformes | Lemos 2009 |
| *Hypostomus pyrineusi* | Loricariidae | Siluriformes | Ferreira *et al.* 2009 |
| *Loricaria cataphracta* | Loricariidae | Siluriformes | Ferreira *et al.* 2009 |
| *Loricariichthys acutus* | Loricariidae | Siluriformes | Ferreira *et al.* 2009 |
| *Loricariichthys nudirostris* | Loricariidae | Siluriformes | Ferreira *et al.* 2009 |
| *Parotocinclus* cf. *britskii* | Loricariidae | Siluriformes | Ferreira *et al.* 2009 |
| *Parotocinclus longirostris* | Loricariidae | Siluriformes | Ferreira *et al.* 2009 |
| *Peckoltia braueri* | Loricariidae | Siluriformes | Ferreira *et al.* 2009 |
| *Pseudacanthicus histrix* | Loricariidae | Siluriformes | Lemos 2009 |
| *Pseudoloricaria laeviuscula* | Loricariidae | Siluriformes | Ferreira *et al.* 2009 |
| *Pterygoplichthys gibbiceps* | Loricariidae | Siluriformes | Ferreira *et al.* 2009 |
| *Rhinelepis* sp. | Loricariidae | Siluriformes | Ferreira *et al.* 2009 |
| *Rineloricaria* aff. *hasemani* | Loricariidae | Siluriformes | Ferreira *et al.* 2009 |
| *Rineloricaria castroi* | Loricariidae | Siluriformes | Ferreira *et al.* 2009 |
| *Rineloricaria* cf. *lanceolata* | Loricariidae | Siluriformes | Ferreira *et al.* 2009 |
| *Rineloricaria phoxocephala* | Loricariidae | Siluriformes | Ferreira *et al.* 2009 |
| *Rineloricaria* sp. | Loricariidae | Siluriformes | Ferreira *et al.* 2009 |
| *Squaliforma* cf. *emarginata* | Loricariidae | Siluriformes | Ferreira *et al.* 2009 |
| *Squaliforma emarginata* | Loricariidae | Siluriformes | Ferreira *et al.* 2009 |
| *Calophysus macropterus* | Pimelodidae | Siluriformes | Ferreira *et al.* 2009 |
| *Duopalatinus* sp. | Pimelodidae | Siluriformes | Ferreira *et al.* 2009 |
| *Gênero novo* sp. *"olho grande"* | Pimelodidae | Siluriformes | Ferreira *et al.* 2009 |
| *Gênero novo* sp. *"olho pequeno"* | Pimelodidae | Siluriformes | Ferreira *et al.* 2009 |
| *Hemisorubim platyrhynchos* | Pimelodidae | Siluriformes | Ferreira *et al.* 2009 |
| *Leiarius pictus* | Pimelodidae | Siluriformes | Lemos 2009 |
| *Megalonema amaxanthum* | Pimelodidae | Siluriformes | Ferreira *et al.* 2009 |
| *Megalonema platycephalum* | Pimelodidae | Siluriformes | Ferreira *et al.* 2009 |
| *Phractocephalus hemioliopterus* | Pimelodidae | Siluriformes | Ferreira *et al.* 2009 |
| *Pimelodina flavipinnis* | Pimelodidae | Siluriformes | Ferreira *et al.* 2009 |
| *Pimelodus albofasciatus* | Pimelodidae | Siluriformes | Ferreira *et al.* 2009 |
| *Pimelodus blochii* | Pimelodidae | Siluriformes | Ferreira *et al.* 2009 |
| *Pimelodus microstoma* | Pimelodidae | Siluriformes | Ferreira *et al.* 2009 |

| SPECIES | FAMILY | ORDER | FIRST RECORD |
|---|---|---|---|
| *Pimelodus* sp. | Pimelodidae | Siluriformes | Lemos 2009 |
| *Pirinampus pirinampu* | Pimelodidae | Siluriformes | Lemos 2009 |
| *Platynematichthys notatus* | Pimelodidae | Siluriformes | Lemos 2009 |
| *Platysilurus mucosus* | Pimelodidae | Siluriformes | Ferreira *et al.* 2009 |
| *Platystomatichthys sturio* | Pimelodidae | Siluriformes | Ferreira *et al.* 2009 |
| *Propimelodus* cf. *caesius* | Pimelodidae | Siluriformes | Ferreira *et al.* 2009 |
| *Propimelodus* sp. | Pimelodidae | Siluriformes | Ferreira *et al.* 2009 |
| *Pseudoplatystoma fasciatum* | Pimelodidae | Siluriformes | Lemos 2009 |
| *Pseudoplatystoma punctifer* | Pimelodidae | Siluriformes | Ferreira *et al.* 2009 |
| *Pseudoplatystoma tigrinum* | Pimelodidae | Siluriformes | Ferreira *et al.* 2009 |
| *Sorubim elongatus* | Pimelodidae | Siluriformes | Ferreira *et al.* 2009 |
| *Sorubim lima* | Pimelodidae | Siluriformes | Lemos 2009 |
| *Batrochoglanis raninus* | Pseudopimelodidae | Siluriformes | Ferreira *et al.* 2009 |
| *Batrochoglanis* sp. | Pseudopimelodidae | Siluriformes | Vale 2009 |
| *Batrochoglanis villosus* | Pseudopimelodidae | Siluriformes | Ferreira *et al.* 2009 |
| *Microglanis poecilus* | Pseudopimelodidae | Siluriformes | Ferreira *et al.* 2009 |
| *Scoloplax* cf. *dicra* | Scoloplacidae | Siluriformes | Ferreira *et al.* 2009 |
| *Scoloplax* sp. | Scoloplacidae | Siluriformes | Vale 2009 |
| *Ituglanis* sp. | Trichomycteridae | Siluriformes | Ferreira *et al.* 2009 |
| *Ochmacanthus* sp. *"curto, malhado"* | Trichomycteridae | Siluriformes | Ferreira *et al.* 2009 |
| *Ochmacanthus* sp. *"faixa longitudinal"* | Trichomycteridae | Siluriformes | Ferreira *et al.* 2009 |
| *Paracanthopoma parva* | Trichomycteridae | Siluriformes | Ferreira *et al.* 2009 |
| *Paracanthopoma* sp. *"truc"* | Trichomycteridae | Siluriformes | Ferreira *et al.* 2009 |
| *Paravandellia* sp. | Trichomycteridae | Siluriformes | Ferreira *et al.* 2009 |
| *Trichomycterus hasemani* | Trichomycteridae | Siluriformes | Ferreira *et al.* 2009 |
| *Trichomycterus* sp. *"alto"* | Trichomycteridae | Siluriformes | Ferreira *et al.* 2009 |
| *Vandellia cirrhosa* | Trichomycteridae | Siluriformes | Ferreira *et al.* 2009 |
| *Vandellia sanguinea* | Trichomycteridae | Siluriformes | Ferreira *et al.* 2009 |
| *Synbranchus madeirae* | Synbranchidae | Synbranchiformes | Ferreira *et al.* 2009 |
| *Synbranchus* sp. *"curto"* | Synbranchidae | Synbranchiformes | Ferreira *et al.* 2009 |
| *Synbranchus* sp. *n. "reticulado"* | Synbranchidae | Synbranchiformes | Ferreira *et al.* 2009 |
| *Colomesus asellus* | Tetraodontidae | Tetraodontiformes | Ferreira *et al.* 2009 |
| CLASSE ELASMOBRANCHII | | | |
| *Plesiotrygon iwamae* | Potamotrygonidae | Myliobatiformes | Ferreira *et al.* 2009 |
| *Potamotrygon motoro* | Potamotrygonidae | Myliobatiformes | Ferreira *et al.* 2009 |
| *Potamotrygon orbignyi* | Potamotrygonidae | Myliobatiformes | Ferreira *et al.* 2009 |
| *Potamotrygon scobina* | Potamotrygonidae | Myliobatiformes | Ferreira *et al.* 2009 |