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Birds of Humaitá Forest Reserve, Acre, Brazil: an important forest fragment in south-west Amazonia

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Summary.—Humaitá Forest Reserve (HFR) is a forest fragment in the state of Acre, Brazil. Between 2009 and 2019, this fragment has been inventoried by multiple ornithologists and birdwatchers. To provide a comprehensive list of the avifauna of HFR, we compiled all of the available data, including published reports and recent, unpublished surveys. The list includes 356 bird species belonging to 60 families and 23 orders. This species richness is the greatest recorded in those forest fragments that have been inventoried in eastern Acre. We found that HFR is an important site for the conservation of many threatened species, and migrants, as well as poorly known species with a restricted geographic distribution, such as Semi-collared Puffbird *Malacoptila semicincta*, Goeldi’s Antbird *Akletos goeldii*, Rufous Twistwing *Cnipodectes superrufus* and Acre Tody-Tyrant *Hemitriccus cohnhafti*.

South-west Amazonia is one of the world’s biologically richest regions in terms of birds, with more than 500 species at some localities (e.g. Terborgh et al. 1984, Parker et al. 1994, Brown & Freitas 2002, Whittaker et al. 2002). The avifauna of the Brazilian state of Acre, which borders Peru, Bolivia and the Brazilian states of Rondônia and Amazonas, is well known, with more than 700 species documented (Guilherme 2016). In addition to species richness, the region is also characterised by high endemism, with many species unique to the Inambari centre of endemism between the Solimões and Madeira Rivers (Haffer 1978, Cracraft 1985, Silva et al. 2019). In Acre, at least 23 species are confined to the Inambari centre, and 12 of these occur in Brazil only in Acre and adjacent parts of Amazonas (Guilherme 2012, 2016). Furthermore, some species are restricted to eastern Acre, including many bamboo specialists (Guilherme & Santos 2009, Guilherme 2012, 2016).

Eastern Acre is also the region most affected by anthropogenic impacts in south-west Amazonia, at the western extreme of the ‘Arc of Deforestation’ in southern Amazonia, where cattle-ranching and cash-cropping are expanding relentlessly (Fearnside 2017). Acre’s capital, Rio Branco, is also in this region, which is characterised by a mosaic of many urban and rural forest fragments within an anthropogenic matrix dominated by cattle pasture (Guilherme 2016).

Fragmentation of forest not only impacts avian communities, in particular by eliminating certain ecological guilds (Stouffer & Bierregaard 1995, Bierregaard & Stouffer 1997, Stratford & Stouffer 1999), but may also affect the physiological integrity of individual birds (Hernández-Palma & Stouffer 2018). Long-term studies of bird communities in forest fragments may provide potentially valuable insights into the impacts of fragmentation on community structure vis-à-vis pristine habitats (Rutt et al. 2017).

Although the number of bird surveys has progressively increased in Amazonia, systemic long-term surveys of a given area are still rare (Rutt et al. 2017). We compiled a list of the avifauna of Humaitá Forest Reserve (HFR), a forest fragment owned by the Instituto Nacional de Colonização e Reforma Agrária (INCRA), but which has been ceded...
to the Universidade Federal do Acre (UFAC) for research purposes. Other inventories available for HFR include medium-sized and large mammals (Botelho et al. 2012) and palms (Pinheiro et al. 2015). In 2009, the ornithological database of the HFR was consolidated during doctoral research by EG (Guilherme 2009). Since then, further work has been conducted in HFR, including by TLS and colleagues (Silva et al. 2015), TNM & EG (Melo & Guilherme 2016), DP & EG (Pedroza & Guilherme 2019) and JL and colleagues (Lima et al. 2019). While ongoing research in HFR over the past ten years has produced an increasingly solid database on its avifauna, no comprehensive list of birds was available for the reserve, until the present study.

Methods

Study area.—Humaitá Forest Reserve (HFR) is in the municipality of Porto Acre (09°45′52″S, 67°38′02″W), Acre, Brazil (Fig. 1), and covers c.2,000 ha (Botelho et al. 2012). The fragment is surrounded by the Humaitá Settlement Project and farms, with the Acre River forming its eastern limit. Climate is tropical humid, with mean annual temperatures of 24–26°C (Alvares et al. 2013) and mean annual rainfall of 1,900 mm (Alvares et al. 2013). Vegetation is a mosaic of open forest with bamboo, and open forest with palms on terra firme and seasonally flooded (várzea) soils (Barroso et al. 2011).

Data collection.—The preliminary bird species list for HFR was based on three published inventories (Guilherme 2009, 2016, Silva et al. 2015). We added unpublished records by other observers, together with those on digital platforms such as Wikiaves and Xeno-canto. Registration numbers of records on Wikiaves (WA) and Xeno-canto are indicated in the species accounts and Appendix. Species were identified via captures in mist-nets, visual observations or their vocalisations. Specimens collected in HFR and deposited in the ornithology laboratory at UFAC, Rio Branco, and the Museu Paraense Emílio Goeldi (MPEG), Belém, were also examined. Voucher specimens and media identification numbers published online were considered as physical evidence of the species’ occurrence in HFR.

Species classification.—The list was reviewed to identify migratory, endemic species, habitat specialists, cynegetic and threatened species. Migratory species were classified

Figure 1. Location of the Humaitá Forest Reserve (HFR) in the state of Acre, Brazil, near the city of Rio Branco (red star). The area that corresponds to the HFR, administered by the Federal University of Acre, is outlined by the red polygon.
Figure 2. Examples of migratory species recorded in the Humaitá Forest Reserve, Acre, Brazil. (A) Broad-winged Hawk *Buteo platypterus* (Diego Pedroza); (B) Yellow-billed Cuckoo *Coccyzus americanus* (David P. Guimarães); (C) Rufous Casiornis *Casiornis rufus* (David P. Guimarães). (D) Swainson’s Thrush *Catharus swainsoni* (Diego Pedroza).

Figure 3. Three endemic species from the Inambari center associated with patches of *Guadua* bamboo recorded in the Humaitá Forest Reserve, Acre, Brazil. (A) Rufous-headed Woodpecker *Celeus spectabilis* (David P. Guimarães). (B) Rufous Twistwing *Cnipodectes superrufus* (Tomaz N. de Melo). (C) Acre Tody-Tyrant *Hemitriccus cohnhafti* (Ricardo Placido).
using Somenzari et al. (2018), while bamboo forest specialists and species associated with patches of Guadua bamboo were identified based on Kratter (1997), Guilherme & Santos (2009), Lebbin (2013) and Guilherme (2012, 2016). Species endemic to the Inambari centre of endemism (sensu Silva et al. 2005, 2019) were identified using Haffer (1978), Cracraft (1985) and Guilherme (2012, 2016). Game (cynegetic) species targeted by subsistence hunters were classified following Ojasti (1993), Sick (1993) and Sigrist (2014). Conservation status follows IUCN (2019).

Feeding guild and foraging stratum of each species was also determined, based on Wilman et al. (2014). Scientific nomenclature follows that of the Comitê Brasileiro de Registros Ornitológicos (Piacentini et al. 2015). In some cases, voucher specimens were collected under ICMBio / SISBio authorisation no. 23269-1, and deposited either at UFAC, Rio Branco, or MPEG, Belém. Some birds were banded using numbered metal rings supplied by CEMAVE (Centro Nacional de Pesquisa e Conservação de Aves Silvestres), under the scope of project 1099, coordinated by EG (senior bird bander, reg. no. 324654).

Results

Compilation of records made in HFR between 2009 and October 2019 revealed the presence of 356 bird species in 60 families and 23 orders (Appendix). Families represented by the largest numbers of species were Thamnophilidae (n = 37 species, 10.3% of the total), Thraupidae (n = 28 species, 7.9%), Tyrannidae (n = 26 species, 7.3%), Rynchocyclidae (n = 17 species, 4.8%) and Psittacidae (n = 14 species, 3.9%). Overall, 195 species (54.8%) are passerines and 161 (45.2%) non-passerines.

The most species-diverse foraging guilds (Appendix) were the insectivores (196 species), frugivores (56 species) and omnivores (42 species). Most birds forage in the midstorey (84 species), canopy (50 species) or alternate between the understorey and midstorey (40 species).

Thirteen bird species visit HFR on migration (Fig. 2). Slightly more than half of these (53.8%, n = 7) are austral migrants, with the remainder 23.1% (n = 3) being intra-tropical migrants and 23.1% (n = 3) Nearctic migrants. Eleven species (3.1%) are endemic to the Inambari centre of endemism. Eighteen species (5.04%) are either bamboo forest specialists or possess some degree of association with tracts of Guadua bamboo in south-west Amazonia (Fig. 3). Twenty-nine species (8.1%) are considered to be cynegetic (Appendix), including Tinamidae (n = 9 species, 2.5% of the total), Anatidae (n = 1 species, 0.3%) and Cracidae (n = 3 species, 0.8%). Sixteen (4.5%) species are included in higher categories of threat by the IUCN (2019), including nine Near Threatened (2.5%) and seven Vulnerable (2%) (Appendix).

Below, we comment on aspects of the biology and distribution of selected species.

Species accounts

BROAD-WINGED HAWK Buteo platypterus

Nearctic migrant. Observed by DP at the edge of HFR on 9 November 2017 (WA2792378; Fig. 2A). Only the second record in Acre (Guilherme 2016). Stotz et al. (1992) reported the species’ occurrence in neighbouring Rondônia between October and March. This indicates that the record at HFR was within its overwintering period in south-west Amazonia.

ASH-COLOURED CUCKOO Microccocyx cinereus

Austral migrant. Guilherme (2009) first reported the species in HFR. A female, collected on 20 July 2007, is deposited in Belém (MPEG 63485). The date of this record corresponds to the coldest part of the austral winter in southern Brazil, where the species breeds (Payne 2019a).
YELLOW-BILLED CUCKOO *Coccyzus americanus*
Nealartic migrant. One observed by DPG foraging for insects in the canopy on 30 October 2017 (WA3515980; Fig. 2B). Breeds in North and Middle America, and migrates to South America in the boreal winter (Payne 2019b). The date of this record indicates that *C. americanus* arrives in the region shortly before the start of the boreal winter. Only the third record in Acre (GBIF 2019, Wikiaves 2019).

RUFOUS-HEADED WOODPECKER *Celeus spectabilis*
Bamboo forest specialist. Common in HFR, where invariably observed in bamboo. The territorial song and drumming is audible over long distances, and evidence of its feeding behaviour is often observed on bamboo stalks. A pair with two juveniles observed by TNM on 12 August 2014, in bamboo near the reserve headquarters (Fig. 3A).

BLUISH-SLATE ANTSRIKE *Thamnomanes schistogynus*
Endemic. Guilherme (2009) presented the first records in HFR. Specimens have been deposited in Belém (MPEG 59967, 59968). Subsequently, in 2018, DPG monitored the species. He found that *T. schistogynus* is a mixed-species flock leader in HFR, and occurs in bamboo forest and *terra firme* forest with palms.

YELLOW-BREASTED WARBLING ANTIBIRD *Hypocnemis subflava*
Endemic; bamboo forest specialist. Silva *et al.* (2015) made the first record in HFR, and DP monitored the species in 2017. In HFR, the species occurs exclusively in bamboo forest, foraging for prey in bamboo culms and leaves. Population density was estimated in 16-ha grids, with some individuals being banded, at 0.55–0.66 pairs per ha in bamboo patches (Pedroza & Guilherme 2019). In DPG’s 2018 study of mixed-species flocks, *H. subflava* was a constant presence in flocks led by *Thamnomanes schistogynus* and the flock’s home range coincided with bamboo patches.

RUFOUS TWISTWING *Cnipodectes superrufus*
Endemic; bamboo forest specialist; Vulnerable. In August–September 2014, TNM observed one in bamboo patches near the reserve headquarters; see Melo *et al.* (2015) (Fig. 3B). On 5 June 2018, DPG trapped and ringed (CEMAVE F55386) one in a bamboo patch, and on 1 August 2018, JML trapped and ringed a second individual (CEMAVE F63509) in a part of the forest apparently without any major concentration of *Guadua* bamboo, whereas the species typically occurs in patches of dense bamboo (Tobias *et al.* 2008). HFR is the northernmost locality at which *C. superrufus* has been recorded (Melo *et al.* 2015, Guilherme 2016).

ACRE TODY-TYRANT *Hemitriccus cohnhafti*
Endemic; bamboo forest specialist; Near Threatened. Recently described species for which few natural history data are available (Zimmer *et al.* 2013, Melo *et al.* 2015). One was recorded in a bamboo patch at HFR on 19 November 2018, by R. Plácido (WA2376966) (Fig. 3C). The record extends the species’ known range 95 km north of the nearest previously known locality, on the Transacreana highway in Acre (Melo *et al.* 2015).

LARGE-HEADED FLATBILL *Ramphotrigon megacephalum*
Bamboo forest specialist. Silva *et al.* (2015) first recorded this species in HFR, and TNM subsequently studied its foraging behaviour, which is focused exclusively on bamboo leaves and branches (Melo & Guilherme 2016). Density of *R. megacephalum* along a 10-km transect in the study area was estimated 1.5 individuals/km², with the species being exclusively
recorded in areas of bamboo. In the 2018 study of mixed-species flocks, DPG considered *R. megacephalum* to be a constant in flocks led by *Thamnomanes schistogynus*.

**DUSKY-TAILED FLATBILL** *Ramphotrigon fuscicauda*
Species associated with bamboos. Guilherme (2009) was the first observer to record *R. fuscicauda* in HFR. Ecologically more flexible than *R. megacephalum*, it occurs in both bamboo-dominated habitats and areas without bamboo, although it is commonly found on bamboo, and is observed foraging close to *R. megacephalum* (Melo & Guilherme 2016). Density of *R. fuscicauda* along a 10-km transect in HFR was estimated at 0.8 individuals/km². DPG considered this species to be another constant participant in mixed-species flocks led by *Thamnomanes schistogynus*.

**Discussion**

Bird species richness recorded in HFR (356 species) corresponds to 50.4% of the 708 species currently documented in the state of Acre (Guilherme 2016). This is an impressive number of species, considering that the fragment covers just 2,000 ha. The number of bird species recorded in HFR has progressively increased since 2009, when just 120 species had been recorded in the area based solely on specimens in museums (Guilherme 2009). The increase is due to constant ornithological field work in this forest, together with sporadic visits by amateur birdwatchers in the last ten years. Surveys in HFR prior to 2019 indicate that the site has a similar bird species richness to that in areas of continuous forest inventoried in Acre during shorter term studies, including Rio Acre Ecological Station (Guilherme & Aleixo 2010) and Chico Mendes Extractive Reserve (Mestre et al. 2010). Bird species richness in HFR is also considerably greater than that recorded in isolated fragments inventoried over the long term, e.g., Catuaba Experimental Farm (Rasmussen et al. 2005) (c.36 km from HFR) and the UFAC Zoobotanical Park (Guilherme 2001, 2016) (c.31 km from HFR).

Both of these sites are in eastern Acre and administered by UFAC. Prior to 2001, 150 bird species had been recorded in the Zoobotanical Park (Guilherme 2001), an area of c.100 ha (Meneses-Filho 1995), although this total increased to 196 species over the next 15 years (Guilherme 2016). In the Catuaba Experimental Farm fragment of 1,200 ha (Medeiros et al. 2013), 257 bird species were recorded by Rasmussen et al. (2005), and this number rose to 275 over the next 11 years (Guilherme 2016). Despite the increasing inventory, total richness at both sites is still lower than at HFR. The Zoobotanical Park is a small fragment within an urban matrix and has virtually no connectivity to other forested areas (Guilherme 2001), whereas Catuaba Experimental Farm is much larger, located within a rural matrix, and surrounded by properties with private reserves of forest (as mandated under current Brazilian environmental legislation). In contrast to these sites, HFR is a much larger area of forest, relatively distant from populated areas, and lies within a matrix of pasture and numerous private forest reserves that together with HFR form a single fragment. Although these areas are not directly comparable due to differences in the size and configuration of the fragments, their history of isolation and characteristics of the matrix (Ferraz et al. 2007), the progressive increase in number of species recorded at each site over time indicates that additional species will be recorded in HFR by further surveys.

Approximately 5% of bird species in HFR are associated with bamboo forests of south-west Amazonia (Kratter 1997, Guilherme & Santos 2009, Guilherme 2012, 2016). These species include two of the rarest birds at HFR, Rufous Twistwing and Acre Tody-Tyrant (Tobias et al. 2008, Zimmer et al. 2013, Harvey et al. 2014, Melo et al. 2015). The presence of ecological guilds most sensitive to fragmentation, such as mixed-species flocks...
of understorey insectivores, terrestrial insectivores and army ant followers, reflects the conservation potential of HFR for birds. The presence of several gamebirds, especially Razor-billed Curassow *Pauxi tuberosa*, Spix’s Guan *Penelope jacquacu* and large tinamids such as Grey Tinamus *tao* and Great Tinamous *T. major*, indicates the viability of their local populations, despite hunting (DP & TNM pers. obs.). These findings are similar to those of Botelho *et al.* (2012) for medium and large mammals in HFR. Although they tend to become rarer, large cracids appear to be able to persist in areas with moderate hunting pressure (Barrio 2011, Kattan *et al.* 2016). The presence of Crested *Morphnus guianensis* and Harpy Eagles *Harpia harpyja*, which are also targeted by hunters (Trinca *et al.* 2007, Muñiz-López 2017) is a further indication of the favourable conditions. HFR is almost completely surrounded by cattle pastures, which environment lacks resources for the majority of migratory birds (Saab & Petit 1992), making HFR an important site for migratory species from different regions of the Americas during the year.

HFR is a potentially important area for bird conservation in eastern Acre, given that it has the highest bird species richness recorded anywhere in the state. In addition, it harbours important endemics and habitat specialists, and serves as a strategic stopover for migratory species. Birdwatching, which was initiated in 2013 at HFR by TNM, has attracted people from elsewhere in Brazil and other countries. This type of sustainable tourism has the potential to yield important economic benefits for the region. The proximity to the capital, Rio Branco, and the presence of rare birds such as Ash-throated Gnateater *Conopophaga peruviana*, *Cnipodectes superrufus* and *Hemitriccus cohnhafti*, should attract growing numbers of birders, who in turn can continue to monitor bird populations and add new species to the site list. Some rare species, such as *Morphnus guianensis*, were already found at HFR by hobby birders. Supervision by competent authorities (e.g., Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis - IBAMA) of this important reserve and continued monitoring of its avifauna should guarantee its role as a safe haven for the biodiversity of a region under increasing anthropogenic pressure.

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Appendix

Bird species recorded in the Humaitá Forest Reserve between 2009 and 2019, in Acre, Brazil. Guilds: FR = frugivore; INS = insectivore; INV = invertebrates; NEC = nectarivore; O = omnivore; PS = granivore; VS = vertebrate scavenger. Strata: AE = aerial; W = water; C = canopy; G = ground; G/C = ground/canopy; G/UND/MID = ground/understorey/mid-high; G/UND/MID/C/AE = ground/understorey/mid-high/aerial; UND = understorey; UND/AE = understorey/aerial; UND/MID = understorey/mid-high; UND/MID/C = understorey/mid-high/canopy. Conservation status: * = Near Threatened. ** = Vulnerable. Ecological characteristics (see first column): B = Bamboo forest specialist or associated with bamboo, NM = Nearctic migrant; AM = austral migrant; IM = intra-tropical migrant; E = endemic; C = cynegetic (gamebird). Voucher: MPEG = Museu Paraense Emílio Goeldi, Belém; AC = ornithology laboratory at Universidade Federal do Acre; WA = Wikiaves; XC = Xeno-canto; CEMAVE = ringed.

| Family/Species/Conservation status | English name | Guild | Stratum | Source | Voucher |
|-----------------------------------|--------------|-------|---------|--------|---------|
| **TINAMIDAE**                     |              |       |         |        |         |
| Tinamus tao **, C                 | Grey Tinamou | FR    | G       | Present study |
| Tinamus major * , C               | Great Tinamou| FR    | G       | Guilherme (2009) MPEG 63461 |
| Tinamus guttatus * , C            | White-throated Tinamou | FR | G | Present study |
| Crypturellus cinereus C           | Cinereous Tinamou | FR | G | Present study |
| Crypturellus soui C               | Little Tinamou | O   | G       | Present study |
| Crypturellus obsOLETUS C          | Brown Tinamou | FR  | G       | Present study |
| Crypturellus undulatus C          | Undulated Tinamou | FR | G | Guilherme (2009) MPEG 63460, WA3325303 |
| Crypturellus Strigulosus C        | Brazilian Tinamou | FR | G | Present study |
| Crypturellus atrocapillus * , C   | Black-capped Tinamou | O   | G       | Present study |
| **ANATIDAE**                      |              |       |         |        |         |
| Amazonetta brasiliensis C         | Brazilian Teal | O   | G       | Present study |
| **CRACIDAE**                      |              |       |         |        |         |
| Penelope jacquacu C               | Spix’s Guan  | FR    | MID     | Present study |
| Ortalis guttata C                 | Speckled Chachalaca | FR | MID/C  | Guilherme (2009) MPEG 63462, WA3334008 |
| Pauxi tuberosa C                  | Razor-billed Curassow | FR | G       | Present study |
| **ODONTOPHORIDAE**                |              |       |         |        |         |
| Odontophorus stellatus            | Starred Wood Quail | O   | G       | Present study |
| **CICONIDAE**                     |              |       |         |        |         |
| Mycteria americana **MI**         | Wood Stork   | VS    | G       | Present study |
| **ARDEIDAE**                      |              |       |         |        |         |
| Tigrisoma lineatum                | Rufescent Tiger Heron | INV | W | Guilherme (2009) MPEG 63463 |
| Cochlearius cochlearius           | Boat-billed Heron | INV | G   | Guilherme (2009) MPEG 63464 |
| Babulcus ibis                     | Cattle Egret | INV | G   | Present study |
| Ardea alba                        | Great Egret  | VS    | W       | Present study |
| Family/Species/Conservation status | English name            | Guild | Stratum | Source                        | Voucher               |
|-----------------------------------|-------------------------|-------|---------|-------------------------------|-----------------------|
| **THRESKIORNITHIDAE**             |                         |       |         |                               |                       |
| *Mesembrinibis cayennensis*       | Green Ibis              | INV   | G       | Guilherme (2009)              | MPEG 63611            |
| **CATHARTIDAE**                   |                         |       |         |                               |                       |
| *Cathartes aura*                  | Turkey Vulture          | VS    | G       | Present study                 |                       |
| *Cathartes melambrotus*           | Greater Yellow-headed Vulture | VS | G       | Present study                 | WA1371809             |
| *Coragyps atratus*                | Black Vulture           | VS    | G       | Present study                 | WA1371808             |
| *Sarcopapamus papa*               | King Vulture            | VS    | G       | Present study                 | WA1371810             |
| **ACCUPITRIDAE**                  |                         |       |         |                               |                       |
| *Leptodon cayanensis*             | Grey-headed Kite        | O     | UND/MID | Present study                 |                       |
| *Elanoides forficatus* MN         | Swallow-tailed Kite     | INV   | MID     | Present study                 |                       |
| *Harpagus bidentatus*             | Double-toothed Kite     | INV   | C       | Present study                 |                       |
| *Ictinia plumbea*                 | Plumbeous Kite          | INV   | AE      | Present study                 |                       |
| *Butogallus schistaceus*          | Slate-coloured Hawk     | VS    | G       | Present study                 |                       |
| *Urubitinga urubitinga*           | Great Black Hawk        | VS    | C       | Present study                 | WA3324073             |
| *Rupornis magnirostris*           | Roadside Hawk           | VS    | G/UND/MID | Guilherme (2009)              | MPEG 63471, MPEG 6334003 |
| *Pseudastur albicollis*           | White Hawk              | VS    | C       | Present study                 |                       |
| *Buteo nitidus*                   | Grey-lined Hawk         | VS    | UND/MID/C | Present study               |                       |
| *Buteo albonotatus*               | Zone-tailed Hawk        | VS    | G       | Present study                 |                       |
| *Buteo platypterus* MN            | Broad-winged Hawk       | VS    | G       | Present study                 | WA2792378             |
| *Morphnus guianensis* *           | Crested Eagle           | VS    | MID/C/AE | Present study               | WA959961              |
| *Harpia harpyja* *                | Harpy Eagle             | VS    | MID/C   | Present study                 | WA3158637, WA5138635  |
| *Spizaetus tyrannus* *            | Black Hawk-Eagle        | VS    | MID     | Present study                 |                       |
| *Spizaetus ornatus* *             | Ornate Hawk-Eagle       | VS    | MID     | Present study                 |                       |
| **EURYPYGIDAE**                   |                         |       |         |                               |                       |
| *Eurypyga helias*                 | Sunbittern              | VS    | W       | Present study                 | XC468211              |
| **RALLIDAE**                      |                         |       |         |                               |                       |
| *Aramides cajanes*                | Grey-necked Wood Rail   | O     | W       | Present study                 | WA3325007, 1460974    |
| *Laterallus viridis*              | Russet-crowned Crake    | INv   | G       | Present study                 |                       |
| *Laterallus exilis*               | Grey-breasted Crake     | INv   | G       | Guilherme (2009)              | MPEG 63612            |
| *Porphyrio martinicus*            | Purple Gallinule        | PS    | G/UND   | Guilherme (2009)              | MPEG 59901            |
| **CHARADRIIDAE**                  |                         |       |         |                               |                       |
| *Vanellus cayanus*                | Pied Lapwing            | INV   | G       | Guilherme (2009)              | MPEG 63613            |
| *Vanellus chilensis*              | Southern Lapwing        | INV   | G       | Present study                 |                       |
| **JACANIDAE**                     |                         |       |         |                               |                       |
| *Jacana jacana*                   | Wattled Jacana          | INV   | W       | Guilherme (2009)              | MPEG 63621            |
| **STERNIDAE**                     |                         |       |         |                               |                       |
| *Phaetusa simplex*                | Large-billed Tern       | VS    | W       | Present study                 |                       |
| **COLUMBIIDAE**                   |                         |       |         |                               |                       |
| *Columbina talpacoti* *           | Ruddy Ground Dove       | PS    | G       | Present study                 |                       |
### Family/Species/Conservation status

| English name                  | Guild | Stratum | Source                        | Voucher                  |
|------------------------------|-------|---------|-------------------------------|--------------------------|
| *Patagioenas plumbea* C      |       |         |                               |                          |
| Plumbeous Pigeon              | O     | C       | Guilherme (2009)              | MPEG 63473, WA969204, 969193 |
| *Patagioenas subrufinacea* C. |       |         |                               |                          |
| Ruddy Pigeon                  | FR    | MID/C   | Guilherme (2016)              | WA3324169                |
| *Leptotila verreauxi*         | PS    | G       | Present study                 |                          |
| Grey-fronted Dove             |       |         |                               |                          |
| *Leptotila rufaxilla* C       | PS    | G       | Guilherme (2009)              | MPEG 63622, 63623        |
| White-tipped Dove             |       |         |                               |                          |
| *Geotrygon montana*           | O     | G       | Guilherme (2009)              | MPEG 59906, 59907, 59908, 59909, WA3333994 |
| Ruddy Quail-Dove              |       |         |                               |                          |

#### Cuculidae

| English name                  | Guild | Stratum | Source                        | Voucher                  |
|------------------------------|-------|---------|-------------------------------|--------------------------|
| *Coccycua minuta*            | INV   | UND/MID | Present study                 | AC 186, MPEG 63484, 64562, WA1461971 |
| Little Cuckoo                |       |         |                               |                          |
| *Micrococcyx cinereus* MA    | INV   | MID     | Guilherme (2009)              | MPEG 63485               |
| Ash-coloured Cuckoo          |       |         |                               |                          |
| *Pipa caaya*                 | INV   | C       | Guilherme (2009)              |                          |
| Squirrel Cuckoo              |       |         |                               |                          |
| *Pipa melanogaster*          | INV   | C       | Present study                 |                          |
| Black-bellied Cuckoo         |       |         |                               |                          |
| *Coccyzus melanoryphus*      | INV   | G       | Present study                 |                          |
| Dark-billed Cuckoo           |       |         |                               |                          |
| *Coccyzus americanus* MN     | INV   | MID/C   | Present study                 | WA3515980                |
| Yellow-billed Cuckoo         |       |         |                               |                          |
| *Coccyzus euleri*            | INV   | G       | Present study                 |                          |
| Pearly-breasted Cuckoo       |       |         |                               |                          |
| *Crotophaga major*           | O     | G/C     | Present study                 |                          |
| Greater Ani                  |       |         |                               |                          |
| *Crotophaga ani*             | O     | G       | Present study                 |                          |
| Smooth-billed Ani            |       |         |                               |                          |
| *Dromococcyx pavoninus* B    | INV   | G/UND   | Present study                 | WA3325305                |
| Pavonine Cuckoo              |       |         |                               |                          |

#### Tytonidae

| English name                  | Guild | Stratum | Source                        | Voucher                  |
|------------------------------|-------|---------|-------------------------------|--------------------------|
| *Tyto furcata*               | VS    | G       | Present study                 |                          |
| American Barn Owl            |       |         |                               |                          |

#### Strigidae

| English name                  | Guild | Stratum | Source                        | Voucher                  |
|------------------------------|-------|---------|-------------------------------|--------------------------|
| *Megasops choliba*           | INV   | UND     | Present study                 |                          |
| Tropical Screech Owl         |       |         |                               |                          |
| *Megasops usta*              | INV   | UND     | Guilherme (2009)              | MPEG 63692, WA1832511    |
| Austral Screech Owl          |       |         |                               |                          |
| *Lophostrix cristata*        | INV   | UND/MID | Present study                 | WA951066                 |
| Crested Owl                  |       |         |                               |                          |
| *Pulsatrix perspicillata*    | VS    | G       | Present study                 | WA3324168                |
| Spectacled Owl               |       |         |                               |                          |
| *Strix huhula*               | INV   | C       | Present study                 | WA960060, WA988215       |
| Black-banded Owl             |       |         |                               |                          |
| *Glaucidium hardyi*          | INV   | G       | Silva et al. (2015)           | WA2798994, WA2798993     |
| Amazonian Pygmy Owl          |       |         |                               |                          |
| *Glaucidium brasilianum*     | INV   | G       | Present study                 |                          |
| Ferruginous Pygmy Owl        |       |         |                               |                          |
| *Athene cunicularia*         | Burrowing Owl, VS | G           | Present study                 |                          |

#### Nyctibiidae

| English name                  | Guild | Stratum | Source                        | Voucher                  |
|------------------------------|-------|---------|-------------------------------|--------------------------|
| *Nyctibius granis*           | INV   | MID     | Present study                 | WA1462134                |
| Great Potoo                   |       |         |                               |                          |
| *Nyctibius aethereus*        | INV   | MID     | Present study                 |                          |
| Long-tailed Potoo             |       |         |                               |                          |
| *Nyctibius griseus*          | INV   | MID     | Present study                 |                          |
| Common Potoo                  |       |         |                               |                          |

#### Caprimulgidae

| English name                  | Guild | Stratum | Source                        | Voucher                  |
|------------------------------|-------|---------|-------------------------------|--------------------------|
| *Nyctiphrus ocellatus*       | INV   | AE      | Present study                 | WA1435565, WA1456885, WA1456880 |
| Ocellated Poorwill           |       |         |                               |                          |
| *Antrostomus sericoecaudatus*| INV   | MID     | Present study                 | XC430737, WA2301402      |
| Silky-tailed Nightjar        |       |         |                               |                          |
| Family/Species/Conservation status | English name          | Guild | Stratum | Source                        | Voucher             |
|-----------------------------------|-----------------------|-------|---------|-------------------------------|---------------------|
| *Lurocalis semitorquatus*         | Short-tailed Nighthawk| INV   | MID     | Present study                 |                     |
| *Nyctidromus albicollis*          | Pauraque              | INV   | G       | Present study                 | WA3325281           |
| *Hydropsalis parvula*             | Little Nightjar       | INV   | MID     | Guilherme (2009)              | MPEG 63493          |
| *Hydropsalis climacocerca*        | Ladder-tailed Nightjar| INV   | G/UND/MID| Guilherme (2009)              | MPEG 63614          |

**APODIDAE**

| Species                          | English name          | Guild | Stratum | Source                        | Voucher             |
|----------------------------------|-----------------------|-------|---------|-------------------------------|---------------------|
| *Chaetura cinereicentris*        | Grey-rumped Swift     | INV   | AE      | Present study                 |                     |
| *Chaetura brachyura*             | Short-tailed Swift    | INV   | AE      | Present study                 |                     |
| *Tachornis squamata*             | Fork-tailed Palm Swift| INV   | MID     | Present study                 |                     |

**TROCHILIDAE**

| Species                          | English name          | Guild | Stratum | Source                        | Voucher             |
|----------------------------------|-----------------------|-------|---------|-------------------------------|---------------------|
| *Glaucis hirsutus*               | Rufous-breasted Hermit| NEC   | UND     | Guilherme (2016)              | AC 591              |
| *Threnetes leucurus*             | Pale-tailed Barthroats| NEC   | UND     | Silva et al. (2015)           | AC 581              |
| *Phaethornis ruber*              | Reddish Hermit        | NEC   | UND     | Guilherme (2009)              | MPEG 64565, AC 585  |
| *Phaethornis hispidus*           | White-bearded Hermit  | NEC   | UND     | Silva et al. (2015)           | AC 584, WA1460980   |
| *Phaethornis philippii*          | Needle-billed Hermit  | NEC   | UND     | Present study                 |                     |
| *Phaethornis bourcieri*           | Straight-billed Hermit| NEC   | UND     | Guilherme (2009)              | MPEG 59922, 59923   |
| *Phaethornis malaris*            | Great-billed Hermit   | NEC   | UND     | Silva et al. (2015)           | AC 582              |
| *Campylopterus largipennis*      | Grey-breasted Sabrewing| NEC  | MID     | Guilherme (2009)              | MPEG 59924, 64563   |
| *Anthracothorax nigricollis*     | Black-throated Mango  | NEC   | C       | Present study                 |                     |
| *Chlorostilbon mellisugus*       | Blue-tailed Emerald   | NEC   | MID     | Present study                 |                     |
| *Thalurania furcata*             | Fork-tailed Woodnymph | NEC   | UND/MID/C | Silva et al. (2015)         | WA1371286           |
| *Hylocharis cyanus*              | White-chinned Sapphire| NEC   | UND/MID/C | Present study                |                     |
| *Amazilia lactea*                | Sapphire-spangled Emerald| NEC  | UND/MID/C | Guilherme (2009)              | MPEG 63626          |

**TROGONIDAE**

| Species                          | English name          | Guild | Stratum | Source                        | Voucher             |
|----------------------------------|-----------------------|-------|---------|-------------------------------|---------------------|
| *Trogon melanurus*               | Black-tailed Trogon   | FR    | C       | Guilherme (2009)              | MPEG 59928, WA3325343, 1462101, 1462097 |
| *Trogon viridis*                 | Green-backed Trogon   | FR    | C       | Guilherme (2009)              | MPEG 63624          |
| *Trogon ramonianus*              | Amazonian Trogon      | FR    | UND     | Guilherme (2009)              | MPEG 63491, WA1462029 |
| *Trogon curucui*                 | Blue-crowned Trogon   | INV   | UND/MID/C | Guilherme (2009)              | MPEG 63492, WA3325342, 1371334 |
| *Trogon collaris*                | Collared Trogon       | INV   | MID     | Present study                 |                     |
| *Pharomachrus pavoninus*         | Pavonine Quetzal      | FR    | MID     | Present study                 | WA1429156, 1433571  |

**ALCEDINIDAE**

| Species                          | English name          | Guild | Stratum | Source                        | Voucher             |
|----------------------------------|-----------------------|-------|---------|-------------------------------|---------------------|
| *Chloroceryle americana*         | Green Kingfisher      | VS    | W       | Present study                 |                     |
| *Chloroceryle aenea*             | American Pygmy Kingfisher | VS    | W       | Present study                 |                     |
| *Chloroceryle inda*              | Green-and-rufous Kingfisher | VS    | W       | Silva et al. (2015)           |                     |

**MOMOTIDAE**

| Species                          | English name          | Guild | Stratum | Source                        | Voucher             |
|----------------------------------|-----------------------|-------|---------|-------------------------------|---------------------|
| *Electron platyrhynchum*         | Broad-billed Motmot   | INV   | MID     | Guilherme (2009)              | MPEG 59929          |

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| Family/Species/Conservation status | English name            | Guild | Stratum | Source                        | Voucher                                      |
|----------------------------------|-------------------------|-------|---------|-------------------------------|----------------------------------------------|
| **GALBULIDAE**                   |                         |       |         |                               |                                              |
| Galbula cyanicollis              | Blue-necked Jacamar     | INV   | UND/MID | Present study                 |                                              |
| Galbula cyanescens               | Bluish-fronted Jacamar  | INV   | MID     | Guilherme (2009)              | MPEG 63486, 63625, WA3325279, 1460992, 1460987 |
| Galbula dea                      | Paradise Jacamar        | INV   | C       | Present study                 |                                              |
|                                     |                         |       |         |                               |                                              |
| **BUCCONIDAE**                   |                         |       |         |                               |                                              |
| Notharchus hyperrhynchus          | White-necked Puffbird   | INV   | C       | Present study                 | WA3324232                                    |
| Bucco macradactylus              | Chestnut-capped Puffbird| INV   | G/UND/MID | Guilherme (2009)  | MPEG 63490, 63489, WA1460963                     |
| Nystatus abanai                  | Western Striolated Puffbird| INV | MID/C   | Present study                 |                                              |
| Malacoptila semincincta          | Semi-collared Puffbird  | INV   | UND     | Present study                 | WA2787704                                    |
| Nonnula sclateri                 | Fulvous-chinned Nunlet  | INV   | G/UND   | Present study                 | WA3229536, WA1371821, WA3249105                |
| Nonnula ruficapilla              | Rufous-capped Nunlet    | INV   | G/UND/MID| Present study                 |                                              |
| Monasa nigriformis               | Black-fronted Nunbird   | INV   | G/UND   | Guilherme (2009)              | MPEG 63488, WA3325029, 1326323                   |
| Monasa morphaeus                 | White-fronted Nunbird   | INV   | G/UND/MID| Present study                 | WA952520                                     |
| Chelidoptera tenebrosa           | Swallow-winged Puffbird | INV   | AE      | Guilherme (2009)              | MPEG 63487                                    |
| **CAPITONIDAE**                  |                         |       |         |                               |                                              |
| Capito auratus                   | Gilded Barbet           | FR    | MID     | Guilherme (2009)              | MPEG 63501, 64566                              |
| **RAMPHASTIDAE**                 |                         |       |         |                               |                                              |
| Ramphastos tucanus               | White-throated Toucan   | FR    | C       | Present study                 | WA3058758, WA3325334                           |
| Ramphastos vitellinus            | Channel-billed Toucan   | FR    | MID     | Present study                 | WA3325333, WA3204945                           |
| Aulacorhynchus atrogularis       | Black-throated Toucanet | O     | MID     | Present study                 |                                              |
| Pteroglossus inscriptus          | Lettered Aracari        | FR    | C       | Guilherme (2009)              | MPEG 64564                                    |
| Pteroglossus mariae              | Chestnut-eared Aracari  | FR    | C       | Guilherme (2009)              | MPEG 59935                                    |
| Pteroglossus castanotis          | Brown-mandibled Aracari | FR    | MID     | Guilherme (2009)              | MPEG 59934, WA3325332, WA2757307               |
| Pteroglossus beauharnaisii       | Curl-crested Aracari    | FR    | C       | Guilherme (2009)              | MPEG 63502, 63503, 63504, WA3325331, WA3286900 |
| **PICIDAE**                      |                         |       |         |                               |                                              |
| Picumnus rufiventris             | Rufous-breasted Piculet  | INV   | UND/MID | Present study                 |                                              |
| Melanerpes cruidentatus          | Yellow-tufted Woodpecker| O     | C       | Guilherme (2009)              | AC 190, 191, MPEG 63634                        |
| Veniliornis affinis              | Red-stained Woodpecker  | INV   | MID     | Silva et al. (2015)           |                                              |
| Veniliornis passerinus           | Little Woodpecker       | INV   | UND/MID/C| Silva et al. (2015)          |                                              |
| Piculus leucolaemus              | White-throated Woodpecker| INV  | MID/C   | Present study                 |                                              |
| Piculus laemostictus             | Spot-throated Woodpecker| INV   | MID/C   | Present study                 |                                              |
| Family/Species/ Conservation status | English name | Guild | Stratum | Source | Voucher |
|------------------------------------|-------------|-------|---------|--------|---------|
| *Celeus flavus* **C**               | Cream-coloured Woodpecker | INV   | MID     | Present study | WA972554 |
| *Celeus torquatus* *C, C*          | Ringed Woodpecker | O     | MID     | Present study | WA3158715 |
| *Celeus spectabilis* **B, B, C**   | Rufous-headed Woodpecker | INV   | MID     | Present study | WA3325286 |
| *Dryocopus lineatus*               | Lineated Woodpecker | INV   | MID     | Present study | WA3325286 |
| *Campephilus rubricollis*          | Red-necked Woodpecker | INV   | MID     | Present study | WA3325286 |
| *Campephilus melanolaeus*          | Crimson-crested Woodpecker | INV   | MID     | Gilherme (2009) | MPEG 63632, WA3325285, 1460966 |

**FALCONIDAE**

| Species                          | English name | Guild | Stratum | Source | Voucher |
|----------------------------------|--------------|-------|---------|--------|---------|
| *Daptrius ater*                  | Black Caracara | VS    | MID     | Gilherme (2016) | WA3325284 |
| *Ibycter americanus*             | Red-throated Caracara | INV   | MID     | Present study | WA3325284 |
| *Milvago chimachima*             | Yellow-headed Caracara | VS    | G       | Present study | WA3325284 |
| *Herpetotheres cachinnans*       | Laughing Falcon | VS    | G/UND/MID | Present study | WA3325284 |
| *Micrastur ruficollis*           | Barred Forest Falcon | VS    | G       | Gilherme (2009) | MPEG 63472, WA3325023 |
| *Micrastur mirandolaei*          | Slaty-backed Forest Falcon | VS    | UND/MID | Present study | WA3325284 |
| *Micrastur semitorquatus*         | Collared Forest Falcon | VS    | G       | Present study | WA3325284 |

**PSITTACIDAE**

| Species                          | English name | Guild | Stratum | Source | Voucher |
|----------------------------------|--------------|-------|---------|--------|---------|
| *Ara macao* **C**                | Scarlet Macaw | PS    | MID     | Present study | XC430740, WA3212607, WA3110803 |
| *Ara chloropterus* **C**         | Red-and-green Macaw | PS    | MID     | Present study | WA3325284 |
| *Ara severus* **C**              | Chestnut-fronted Macaw | PS    | MID     | Present study | WA3325284 |
| *Primolius couloni* **F**        | Red-bellied Macaw | O     | MID/C   | Present study | WA3325284 |
| *Orthopsittaca manilatus*        | Blue-headed Macaw | FR    | C       | Present study | WA3325284 |
| *Psittacara leucophthalnus*       | White-eyed Parakeet | PS    | MID     | Gilherme (2009) | MPEG 63475, 63476, 63461, WA3325330 |
| *Arahania weddellii*             | Dusky-headed Parakeet | FR    | C       | Present study | WA3324083 |
| *Pyrrhura rupicola* **D**        | Black-capped Parakeet | FR    | UND/MID | Present study | WA3325284 |
| *Brotogeris cyanoptera*          | Cobalt-winged Parakeet | FR    | MID     | Gilherme (2009) | MPEG 6361 |
| *Brotogeris sanctithomae*        | Tui Parakeet | FR    | UND/MID | Present study | WA3325284 |
| *Pionites leucoaster*            | White-bellied Parrot | PS    | UND/MID | Gilherme (2009) | MPEG 63620 |
| *Pionus menstruus*               | Blue-headed Parrot | PS    | MID     | Present study | WA3325314 |
| *Amazona farinosa* **E, C**      | Southern Mealy Amazon | PS    | G/UND/MID | Present study | WA3324081 |
| *Amazona ochrocephala* **C**     | Yellow-crowned Amazon | PS    | G/UND/MID | Gilherme (2009) | MPEG 63474, WA3324081 |

**THAMNOPHILIDAE**

| Species                          | English name | Guild | Stratum | Source | Voucher |
|----------------------------------|--------------|-------|---------|--------|---------|
| *Pygipitra stellaris*            | Spot-winged Antshrike | INV   | MID     | Gilherme (2009) | MPEG 63545, 63637, 63638 |
| *Microrhopias quixensis* **B**   | Dot-winged Antwren | INV   | MID     | Silva et al. (2015) | MPEG 63545, 63637, 63638 |
| *Epinecrophylla leucophthalma*    | White-eyed Antwren | INV   | UND     | Gilherme (2009) | MPEG 63635, 63636 |
| Family/Species/ Conservation status | English name                  | Guild | Stratum | Source                          | Voucher                      |
|------------------------------------|-------------------------------|-------|---------|---------------------------------|------------------------------|
| *Epinecrophylla amazonica*          | Madeira Stipple-throated Antwren | INV   | UND     | Present study                   |                              |
| *Epinecrophylla ornata*            | Ornate Antwren                | INV   | MID     | Guilherme (2009)                | MPEG 59986, WA2301406, WA3064167 |
| *Myrmophylyx atrothorax*           | Black-throated Antbird        | INV   | G       | Present study                   |                              |
| *Myrmotherula brachyura*           | Pygmy Antwren                 | INV   | MID     | Present study                   |                              |
| *Myrmotherula axillaris*           | White-flanked Antwren         | INV   | MID     | Guilherme (2009)                | AC 196, MPEG 59976, 59977, 59978, 59979, 59980, 63542, 63543 |
| *Myrmotherula longipennis*         | Long-winged Antwren           | INV   | UND/MID | Guilherme (2009)                | MPEG 59987, 59988, 59989     |
| *Isleria hauxwelli*                | Plain-throated Antwren        | INV   | G/UND   | Guilherme (2009)                | MPEG 59981, 59982, 59983, 59984, 59985 |
| *Thamnomanes ardesiacus*           | Dusky-throated Antshrike      | INV   | MID     | Guilherme (2009)                | MPEG 59969, 59972, 59973     |
| *Thamnomanes schistogynus*         | Bluish-slate Antshrike        | INV   | MID     | Guilherme (2009)                | MPEG 59967, 59968            |
| *Dichrozona cincta*                | Banded Antbird                | INV   | G       | Present study                   |                              |
| *Thamnophilus dolius*              | Barred Antshrike              | INV   | MID     | Silva et al. (2015)             | XC430732                     |
| *Thamnophilus schistaceus*         | Plain-winged Antshrike        | INV   | MID     | Guilherme (2009)                | MPEG 63540, 63544, XC430733, WA1371282 |
| *Thamnophilus aethiops*            | White-shouldered Antshrike    | INV   | UND/MID | Guilherme (2009)                | AC 192, 193, 194, 195, 588, 590, MPEG 59961, 59962, 59963, 59964, 59965, WA146 |
| *Cymbilaimus lineatus*             | Bamboo Antshrike               | INV   | MID     | Present study                   |                              |
| *Cymbilaimus sanctaemariae*        | Fasciated Antshrike           | INV   | MID     | Present study                   | WA3058776, WA3215270        |
| *Taraba major*                     | Great Antshrike                | INV   | G/UND   | Present study                   |                              |
| *Hylophylax naevius*               | Spot-backed Antbird           | INV   | UND     | Guilherme (2009)                | MPEG 59998, 59999            |
| *Sclateria naevia*                 | Silvered Antbird              | INV   | G       | Guilherme (2016)                | MPEG 60012, WA968802        |
| *Myrmelastes hyperythrus*          | Plumbeous Antbird             | INV   | G/UND   | Guilherme (2009)                | MPEG 64567, WA3324194      |
| *Myrmelastes humaglae*             | Humaitá Antbird               | INV   | G       | Guilherme (2009)                | XC468213                     |
| *Myrmoborus myotherinus*           | Black-faced Antbird           | INV   | G/UND   | Guilherme (2009)                | MPEG 60005, 60006, 60007, 60008, 60009, WA951093 |
| *Myrmoborus leucophrys*            | White-browed Antbird          | INV   | G       | Guilherme (2009)                | MPEG 60010                   |
| *Akletos goeldii*                  | Goeldi’s Antbird              | INV   | G/UND   | Guilherme (2009)                | MPEG 60011, XC430741, WA3324076 |
| *Hafferia fortes*                  | Sooty Antbird                 | INV   | G       | Guilherme (2009)                | MPEG 63539, 63639, 63640, WA3334071 |
| Family/Species/Conservation status | English name | Guild | Stratum | Source | Voucher |
|-----------------------------------|-------------|-------|---------|--------|---------|
| Sciaphylax hemimelaena            | Southern Chestnut-tailed Antbird | INV | G/UND | Guilherme (2009) | AC 199, MPEG 60013, 60014 |
| Cercomacra cinerascens            | Grey Antbird | INV | MID | Present study | WA961150 |
| Cercomacroides fuscicauda         | Riparian Antbird | INV | G/UND | Present study | |
| Cercomacroides serva              | Black Antbird | INV | UND | Guilherme (2009) | MPEG 63549 |
| Hypocnemis subflava               | Yellow-breasted Warbling Antbird | INV | UND | Silva et al. (2015) | WA3223640, WA2943326, WA3382943 |
| Hypocnemis peruviana              | Peruvian Warbling Antbird | INV | UND | Guilherme (2009) | AC 200, 201, 202, 586, MPEG 63547, 63548 |
| Willisornis poecilinotus          | Common Scale-backed Antbird | INV | G | Guilherme (2009) | MPEG 59990, 59991, 59992, 59993, 59994, 59995, 59996, 59997 |
| Phlegopsis nigromaculata          | Black-spotted Bare-eye | INV | G | Guilherme (2009) | AC 204, MPEG 60022, 60023, 60024, 60025 |
| Oneillornis salvini                | White-throated Antbird | INV | G | Guilherme (2009) | AC 203, MPEG 60019, 6002, 63546, WA1371811 |
| Rhegmatorhina melanosticta        | Hairy-crested Antbird | INV | G | Guilherme (2009) | MPEG 60021 |

**CONOPOPHAGIDAE**

| Family/Species/Conservation status | English name | Guild | Stratum | Source | Voucher |
|-----------------------------------|-------------|-------|---------|--------|---------|
| Conopophaga peruviana             | Ash-throated Gnateater | INV | G | Present study | CEMAVE E152474 |

**GRALLARIDAE**

| Family/Species/Conservation status | English name | Guild | Stratum | Source | Voucher |
|-----------------------------------|-------------|-------|---------|--------|---------|
| Hylepous berlepschi               | Amazonian Antpitta | INV | G | Present study | |
| Myrmothera campanisona            | Thrush-like Antpitta | INV | G | Present study | WA1371814, 1371815 |

**FORMICARIIDAE**

| Family/Species/Conservation status | English name | Guild | Stratum | Source | Voucher |
|-----------------------------------|-------------|-------|---------|--------|---------|
| Formicarius analis                | Black-faced Antthrush | INV | G | Present study | WA1371813 |
| Formicarius colma                 | Rufous-capped Antthrush | INV | G | Silva et al. (2015) | |

**SCLERURIDAE**

| Family/Species/Conservation status | English name | Guild | Stratum | Source | Voucher |
|-----------------------------------|-------------|-------|---------|--------|---------|
| Sclerus mexicanus                 | Tawny-throated Leafletosser | INV | G | Present study | |
| Sclerus caudacatus                | Black-tailed Leafletosser | INV | G | Guilherme (2009) | MPEG 59959 |

**DENDROCOLAPTIDAE**

| Family/Species/Conservation status | English name | Guild | Stratum | Source | Voucher |
|-----------------------------------|-------------|-------|---------|--------|---------|
| Dendrocincla fuliginosa           | Plain-brown Woodcreeper | INV | G/UND/MID | Guilherme (2009) | MPEG 63522, 63523 |
| Dendrocincla merula               | White-chinned Woodcreeper | INV | G/UND | Guilherme (2016) | AC 205, MPEG 59936, 63521 |
| Decamyxura longicauda             | Long-tailed Woodcreeper | INV | MID | Present study | |
| Sittasomus griseicapillus         | Olivaceous Woodcreeper | INV | MID/C | Present study | |
| Glyphorynchus spirurus            | Wedge-billed Woodcreeper | INV | C | Guilherme (2009) | MPEG 59942 |
| Xiphorhynchus elegans             | Elegant Woodcreeper | INV | MID | Guilherme (2009) | MPEG 59943, 59944, 59945, 59946, 63524 |
| Xiphorhynchus guttatus            | Lafresnaye’s Woodcreeper | INV | MID | Guilherme (2009) | MPEG 63525, WA961216 |
| Campylorhamphus trochilorostris   | Red-billed Scythebill | INV | UND | Guilherme (2009) | MPEG 59949, WA3061123 |
| Family/Species Conservation status | English name                  | Guild | Stratum | Source          | Voucher                      |
|----------------------------------|-------------------------------|-------|---------|-----------------|------------------------------|
| Dendroplex picus                 | Straight-billed Woodcreeper   | INV   | MID     | Present study    |                              |
| Lepidocolaptes fatimalinae       | Inambari Woodcreeper          | INV   | C       | Present study    |                              |
| Dendractastes rufigula           | Cinnamon-throated Woodcreeper | INV   | MID/C   | Present study    | WA1326333                    |
| Dendrocolaptes certhia           | Amazonian Barred Woodcreeper  | INV   | MID     | Present study    |                              |
| Dendrocolaptes picumnus          | Black-banded Woodcreeper      | INV   | G/UND   | Present study    |                              |
| **XENOPIDAE**                    |                               |       |         |                 |                              |
| Xenops minutus                   | Plain Xenops                  | INV   | UND/MID | Guilherme (2009)| MPEG 59960, 63526, AC 208, 209, 595 |
| Xenops rutilans                  | Streaked Xenops               | INV   | MID     | Present study    | WA973883                     |
| **FURNARIIDAE**                  |                               |       |         |                 |                              |
| Furnarius leucopus               | Pale-legged Hornero           | INV   | G       | Present study    |                              |
| Automolus rufipileatus           | Chestnut-crowned Foliage-gleaner | INV   | UND     | Silva et al. (2015) |                              |
| Automolus melanopezus B          | Brown-rumped Foliage-gleaner  | INV   | UND     | Present study    |                              |
| Automolus subulatus              | Striped Woodhaunter           | INV   | UND/MID | Guilherme (2009) | MPEG 59958                   |
| Automolus ochrolaemus            | Buff-throated Foliage-gleaner | INV   | UND     | Guilherme (2009) | MPEG 59954, 59955, 59956, 59957, WA1460958, 952365 |
| Anabacerthia ruficaudata         | Rufous-tailed Foliage-gleaner | INV   | MID/C   | Silva et al. (2015) |                              |
| Philydor erythrocerum            | Rufous-rumped Foliage-gleaner | INV   | MID/C   | Present study    |                              |
| Philydor erythroperutum          | Chestnut-winged Foliage-gleaner | INV   | MID/C   | Present study    | WA1326311                    |
| Synallaxis rutilans              | Ruddy Spinetail               | INV   | G/UND   | Guilherme (2009) | MPEG 59950, WA2455713        |
| **PIPRIDAE**                     |                               |       |         |                 |                              |
| Pipra fasciacauda                | Band-tailed Manakin           | FR    | UND/MID | Guilherme (2009) | MPEG 60040, 60041, 60042, 60043, 60044, 60045, 60046, 60047, 60048, 60049, WA1371299 |
| Ceratopipra rubrocapilla         | Red-headed Manakin            | FR    | UND/MID | Guilherme (2009) | MPEG 60051                   |
| Lepidothrix coronata             | Blue-crowned Manakin          | FR    | UND/MID | Guilherme (2009) | MPEG 63565, 63590, WA1460975 |
| Machaeropterus pyrocephalus      | Fiery-capped Manakin          | FR    | UND/MID | Guilherme (2009) | MPEG 63589, 63655            |
| **ONYCHORHYNCHIDAE**             |                               |       |         |                 |                              |
| Onychorhynchus coronatus         | Amazonian Royal Flycatcher    | INV   | UND/MID | Guilherme (2009) | MPEG 60037, 60038            |
| Terenotriccus erythrurus         | Ruddy-tailed Flycatcher        | INV   | UND/MID | Guilherme (2009) | MPEG 60039, 63573, AC 583    |
| Myiobius atricaudus              | Black-tailed Flycatcher        | INV   | UND/MID | Present study    | WA1460982                    |
| **TITYRIDAE**                    |                               |       |         |                 |                              |
| Laniocera hypopyrra              | Cinereous Mournier            | INV   | UND/MID | Present study    |                              |
| Family/Species/Conservation status | English name                      | Guild | Stratum | Source            | Voucher          |
|----------------------------------|-----------------------------------|-------|---------|------------------|-----------------|
| **Tityra inquisitor**            | Black-crowned Tityra              | FR    | MID     | Present study     |                 |
| **Tityra cayana**                | Black-tailed Tityra               | FR    | UND/MID | Present study     |                 |
| **Pachyramphus castaneus**       | Chestnut-crowed Becard            | INV   | MID     | Present study     |                 |
| **Pachyramphus polychropterus**  | White-winged Becard               | O     | MID     | Present study     | WA3324215       |
| **Pachyramphus marginatus**      | Black-capped Becard               | O     | MID     | Present study     | AC 593          |
| **Pachyramphus minor**           | Pink-throated Becard              | O     | UND/MID | Present study     |                 |
| **Pachyramphus validus**         | Crested Becard                    | INV   | UND/MID | Present study     |                 |

**COTINGIDAE**

| English name                      | Guild | Stratum | Source            | Voucher          |
|-----------------------------------|-------|---------|------------------|-----------------|
| Querula purpurata                 | O     | UND/MID | Present study     |                 |
| Lipaugus vociferans               | O     | UND/MID | Present study     | XC430739        |
| Gymnoderus foetidus               | FR    | UND/MID | Guilherme (2009)  | MPEG 63591, 64576|
| Conioptilon mcilhennyi            | FR    | UND/MID | Guilherme (2009)  | MPEG 63657, 64575, XC430736, WA1648888 |

**PIPRITIDAE**

| English name                      | Guild | Stratum | Source            | Voucher          |
|-----------------------------------|-------|---------|------------------|-----------------|
| Piprites chloris                  | INV   | C       | Guilherme (2009)  | MPEG 64586, WA1371295, 951289 |
| Platyrinchus coronatus            | INV   | UND     | Present study     |                 |
| Platyrinchus platyrhynchos        | INV   | MID     | Present study     |                 |

**RHYNCHOCYCLIDAE**

| English name                      | Guild | Stratum | Source            | Voucher          |
|-----------------------------------|-------|---------|------------------|-----------------|
| Cnipodectes superrufus            | INV   | UND     | Present study     |                 |
| Mionectes oleagineus              | INV   | UND     | Present study     |                 |
| Leptopogon amaurocephalus         | INV   | UND/MID | Guilherme (2009)  | MPEG 60032, 60033, 63574, 64572, 600, AC 589 |
| Corythopis torquatus              | INV   | G       | Present study     | WA3325302       |
| Rhynchocatus olivaceus            | INV   | UND/MID | Present study     |                 |
| Tolmomyias sulphurescens          | INV   | MID     | Guilherme (2016)  | AC 587          |
| Tolmomyias assimilis              | INV   | MID     | Guilherme (2009)  | MPEG 64569      |
| Tolmomyias policephalus           | INV   | MID/C   | Present study     |                 |
| Tolmomyias flaviventris           | INV   | C       | Present study     |                 |
| Tolidostrum maculatum             | INV   | MID     | Present study     |                 |
| Tolidostrum chrysocotaphium       | INV   | C       | Guilherme (2009)  | MPEG 64568, 64574|
| Poecilotriccus latirostris        | INV   | UND     | Present study     | AC 592, WA1829296|
| Myiornis caudatus                 | INV   | C       | Present study     |                 |
| Hemitriccus cohaeartii            | INV   | MID     | Present study     | WA2376966       |
| Hemitriccus flammulatus           | INV   | MID     | Silva et al. (2015) | AC 722          |
| Hemitriccus iohannis              | INV   | MID     | Silva et al. (2015) |                 |

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| Family/Species/Conservation status | English name       | Guild | Stratum | Source                          | Voucher                  |
|-----------------------------------|-------------------|-------|---------|--------------------------------|--------------------------|
| *Lophotriccus eulophotes* R, E    | *Long-crested Pygmy Tyrant* | INV   | MID     | Guilherme (2009)               | MPEG 60030, 60031, 63641, AC 425, 426, WA952327 |
| *Zimmerius gracilipes*            | Slender-footed Tyrannulet | INV   | C       | Present study                  |                          |
| *Orinthion inerme*                | White-lobed Tyrannulet | INV   | C       | Present study                  |                          |
| *Myiopagis gainardii*             | Forest Elaenia     | INV   | C       | Present study                  |                          |
| *Myiopagis flavivertex*           | Yellow-crowned Elaenia | INV   | C       | Guilherme (2009)               | MPEG 64571               |
| *Tyrannulus elatus*               | Yellow-crowned Tyrannulet | INV   | C       | Guilherme (2009)               | MPEG 63644, 64573        |
| *Capsiempis flaveola*             | Yellow Tyrannulet   | INV   | MID     | Present study                  | WA2879673, WA3315889     |
| *Phaomyias murina*                | Mouse-colored Tyrannulet | INV   | UND/MID/C | Present study                |                          |
| *Attila spadiceus*                | Bright-rumped Attila | O     | MID/C   | Guilherme (2009)               | MPEG 63571, WA951253     |
| *Legatus leucophaeus*             | Piratic Flycatcher  | INS   | C       | Present study                  | WA1586489                |
| *Ramphotrigon megacephalum* B     | Large-headed Flatbill | INS   | UND/MID | Silva et al. (2015)            | WA1374005, 1462118, 1374005 |
| *Ramphotrigon fuscauda* B         | Dusky-tailed Flatbill | INS   | UND/MID | Guilherme (2009)               | MPEG 63648, 63649, WA3325337, 1461000 |
| *Myiarchus tuberculifer*          | Dusk-capped Flycatcher | INS   | UND/MID/C | Guilherme (2009)               | MPEG 63642, 63643        |
| *Myiarchus ferox*                 | Short-crested Flycatcher | O     | C       | Guilherme (2009)               | MPEG 64570               |
| *Syrystes albocinereus*           | White-crested Sirystes | INV   | UND     | Present study                  | WA1374005, 1462118, 1374005 |
| *Rhytipterna simplex*             | Greyish Mourner    | INV   | UND/MID | Guilherme (2009)               | MPEG 63648, 63649, WA3325337, 1461000 |
| *Casiornis rufus* MA              | Rufous Casiornis   | INS   | UND     | Guilherme (2009)               | MPEG 63645               |
| *Pitangus sulphuratus*            | Great Kiskadee      | O     | G       | Present study                  |                          |
| *Myiodyastes maculatus*           | Sulphur-bellied Flycatcher | O     | MID     | Guilherme (2009)               | MPEG 63650               |
| *Megarynchus pitangus*            | Boat-billed Flycatcher | O     | MID     | Present study                  |                          |
| *Myiozetetes cananensis*          | Rusty-margined Flycatcher | INV   | G       | Present study                  |                          |
| *Myiozetetes similis*             | Social Flycatcher   | O     | MID     | Present study                  |                          |
| *Tyrannus melancholicus*          | Tropical Kingbird   | INV   | MID/C   | Present study                  |                          |
| *Tyrannus savana* MA              | Fork-tailed Flycatcher | INV   | G/UND   | Present study                  |                          |
| *Myiobius fasciatus* MA           | Bran-coloured Flycatcher | INV   | UND     | Present study                  |                          |
| *Pyrocephalus rubinus* MA         | Vermilion Flycatcher | INV   | UND/MID | Present study                  |                          |
| *Cnemotriccus fuscatus*           | Fuscous Flycatcher  | INV   | G/UND   | Present study                  |                          |
| **VIREONIDAE**                    |                    |       |         |                                |                          |
| *Calyptorhynchus gujanensis*      | Rufous-browed Peppershrike | INV   | UND/MID | Present study                  |                          |
| *Vireolanus leucotis*             | Slaty-capped Shrike-Vireo | INV   | C       | Present study                  |                          |
| *Tunchiornis ochraceiceps*        | Tawny-crowned Greenlet | INV   | UND     | Guilherme (2009)               | MPEG 60052, 60053        |
| Family/Species/Conservation status | English name | Guild | Stratum | Source | Voucher |
|-----------------------------------|-------------|-------|---------|--------|---------|
| **Vireo chivi** MA                | Chivi Vireo | INV   | C       | Present study | |
| **HIRUNDINIDAE**                  |             |       |         |        |         |
| Atticora fasciata                | Wing-banded Swallow | INV | UND/AE | Present study | |
| Stelgidopteryx ruficollis         | Southern Rough-winged Swallow | INV | MID | Guilherme (2009) | MPEG 63658 |
| **TROGLODYTIDAE**                |             |       |         |        |         |
| Microcerculus marginatus         | Southern Nightingale-Wren | INV | G/UND | Present study | WA951261 |
| Troglodytes musculus             | House Wren | INV | UND | Present study | |
| Campylorhynchus tundinus         | Thrush-like Wren | INV | UND/MID | Present study | |
| Phaeogomus genibarbis            | Moustached Wren | INV | UND | Silva et al. (2015) | |
| Cantorchilus leucotis             | Buff-breasted Wren | INV | UND | Present study | |
| **POLIOPTILIDAE**                |             |       |         |        |         |
| Polioptila plumbea               | Tropical Gnatcatcher | INV | UND/MID/C | Present study | |
| **TURDIDAE**                     |             |       |         |        |         |
| Catharus swainsoni MN            | Swainson’s Thrush | INV | G/UND | Present study | |
| Turdus ignobilis                 | Haukwell’s Thrush | O | UND/MID | Present study | |
| Turdus hauxwelli                 | Creamy-bellied Thrush | O | G | Guilherme (2009) | MPEG 60058, WA3324213 |
| Turdus amaurochalinus MA         | Black-billed Thrush | FR | MID/C | Present study | |
| **PASSERELLIDAE**                |             |       |         |        |         |
| Ammodramus aurifrons             | Grassland Sparrow | PS | G | Present study | |
| Arremon taciturnus               | Pectoral Sparrow | O | G/UND | Guilherme (2009) | MPEG 63607, 6360, WA1371289 |
| **PARULIDAE**                    |             |       |         |        |         |
| Myioborus fulvicauda             | Buff-rumped Warbler | INV | G | Silva et al. (2015) | AC 719, WA1341374 |
| **ICTERIDAE**                    |             |       |         |        |         |
| Psarocolius decumanus C           | Crested Oropendola | FR | MID | Present study | XC430736 |
| Psarocolius bifasciatus C         | Olive Oropendola | O | MID/C | Guilherme (2009) | MPEG 63668, XC430734 |
| Cacicus cela                     | Yellow-rumped Cacique | FR | C | Guilherme (2009) | MPEG 63610 |
| Icterus croconotus               | Orange-backed Troupial | FR | MID/C | Present study | WA3324227 |
| Molothrus oryzicorpus             | Giant Cowbird | FR | G/C | Present study | |
| Sturnella militaris              | Red-breasted Meadowlark | O | G | Guilherme (2009) | MPEG 63667 |
| **MITROSPINGIDAE**               |             |       |         |        |         |
| Lamprospiza melanoluca            | Red-billed Pied Tanager | O | C | Present study | |
| **THRAUPIDAE**                   |             |       |         |        |         |
| Cissopis leverianus               | Magpie Tanager | FR | UND/MID | Present study | |
| Patoaria gularis                 | Red-capped Cardinal | INV | UND | Guilherme (2009) | MPEG 63669 |
| Tangara schrankii                | Green-and-gold Tanager | FR | MID | Guilherme (2009) | MPEG 63662 |
| Tangara mexicana                 | Turquoise Tanager | O | C | Guilherme (2009) | MPEG 64577, 64578, 64579 |
| Tangara chilensis                | Paradise Tanager | FR | C | Guilherme (2009) | MPEG 63662 |
| Family/Species/Conservation status | English name                  | Guild | Stratum | Source             | Voucher                      |
|----------------------------------|-------------------------------|-------|---------|--------------------|------------------------------|
| Tangara callophrys               | Opal-crowned Tanager          | FR    | C       | Present study      |                              |
| Tangara episcopus                | Blue-grey Tanager             | O     | MID     | Silva et al. (2015) |                              |
| Tangara palmarum                 | Palm Tanager                  | FR    | C       | Present study      |                              |
| Tangara nigrocincta              | Masked Tanager                | FR    | C       | Present study      |                              |
| Hemithraupis flavicolis          | Yellow-backed Tanager         | INV   | C       | Present study      |                              |
| Hemithraupis guira               | Guira Tanager                 | INV   | C       | Present study      |                              |
| Volatinia jacarina               | Blue-black Grassquit          | O     | G       | Silva et al. (2015) |                              |
| Eucometis penicillata            | Grey-headed Tanager           | INV   | UND     | Present study      |                              |
| Lania versicolor                 | White-winged Shrike-Tanager   | INV   | C       | Present study      |                              |
| Lania luctuosus                  | White-shouldered Tanager      | INV   | MID     | Guilherme (2009)   | MPEG 60054, 63660, 63661,   |
|                                 |                               |       |         |                    | WA1456768                   |
| Ramphocelus nigrogularis         | Masked Crimson Tanager        | O     | MID     | Present study      |                              |
| Ramphocelus carbo                | Silver-beaked Tanager         | O     | UND     | Silva et al. (2015)| WA3333978                   |
| Tersina viridis                  | Swallow Tanager               | FR    | MID     | Guilherme (2009)   | MPEG 64580                   |
| Cyanerpes nitidus                | Short-billed Honeycreeper     | O     | C       | Present study      |                              |
| Dacnis flavivent                 | Yellow-bellied Dacnis         | FR    | MID     | Guilherme (2009)   | MPEG 63663, 64585            |
| Dacnis lineata                   | Black-faced Dacnis            | FR    | C       | Guilherme (2009)   | MPEG 63664                   |
| Dacnis cayana                    | Blue Dacnis                   | O     | C       | Guilherme (2009)   | MPEG 63605                   |
| Sporophila caeruleus ps          | Double-collared Seed Eater    | PS    | G       | Present study      |                              |
| Sporophila castaneiventrus       | Chestnut-bellied Seed Eater   | PS    | UND     | Present study      |                              |
| Sporophila angolensis            | Chestnut-bellied Seed Finch   | PS    | G       | Silva et al. (2015)|                              |
| Saltator coerulescens            | Greyish Saltator              | INV   | UND     | Present study      |                              |
| Saltator maximus                 | Buff-throated Saltator        | INV   | UND     | Silva et al. (2015)|                              |
| Saltator grossus                 | Slate-coloured Grosbeak       | INV   | C       | Guilherme (2009)   | MPEG 63609, 63665, 63666,   |
|                                 |                               |       |         |        | XC467605          |
| CARDINALIDAE                     |                               |       |         |                    |                              |
| Habia rubra                      | Scarlet-throated Ant Tanager  | INI   | MID     | Guilherme (2009)   | MPEG 60055, 60056            |
| Cyanoloxia rothschildii          | Rothschild’s Grosbeak         | FR    | G       | Guilherme (2009)   | MPEG 60057, 63606, WA2454852|
| FRINGILLIDAE                     |                               |       |         |                    |                              |
| Euphonia chlorotica              | Purple-throated Euphonia      | FR    | C       | Present study      |                              |
| Euphonia laniirostris            | Thick-billed Euphonia         | FR    | MID     | Guilherme (2009)   | MPEG, 64582, 64583, 64584   |
| Euphonia chrysopasta             | Golden-bellied Euphonia       | O     | C       | Present study      |                              |
| Euphonia xanthogaster            | Orange-bellied Euphonia       | FR    | MID     | Guilherme (2009)   | MPEG 63670                   |
| Euphonia rufiventris             | Rufous-bellied Euphonia       | FR    | MID     | Present study      |                              |