Birds of the Pantanal floodplains, Brazil: historical data, diversity, and conservation

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Abstract. The Pantanal floodplains of Brazil are a region of rich biodiversity. To date, the true richness of the Pantanal avifauna has not been explored satisfactorily caused by a lack of studies in the region and, especially, by the divergence of opinion among the works published by various authors on the many species found in the region. This is due to the lack of criteria in examining records, both with regard to the reliability of the identifications and in the precise geographical allocation. Therefore, in the study, we collage findings from various studies and records created by us in the last few decades from 199 distinct locations to produce a list of birds in the Pantanal floodplains. We grouped the results into three lists: primary, secondary, and tertiary. We found that the avifauna of the Pantanal floodplain is composed of a total of 617 species, of which 571 (92%) have supporting records of occurrence (primary list) and 46 still lack documentation (secondary list). The number of species listed here for the Pantanal floodplain represents 32% of all avifauna known to the Brazilian territory. This reflects the importance of the biome, as part of the national territory, for the maintenance of a meaningful avifaunistic richness. Migratory birds (n = 183), notably northern ones (n = 43), are among the main players involved in ecological processes of nutrient cycling and dispersion of...
important pathogens between the two continents. With regard to conservation, 25 species are included in some category of threat in the lists of threatened species with global extinction. We hope that our list will help future researchers a more definitive approach when researching the avian fauna in this bountiful region.

**Keywords.** Birds; Biogeographic distribution; Threatened species; Migration; Wetlands and marshes.

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**INTRODUCTION**

The Brazilian Pantanal has a National and International recognition as one of the main inland wetlands for its wide territory (Harris et al., 2005) and by provide of multiple ecosystem services, such as the maintenance of biodiversity (Mitsch et al., 2015). The avian occurring in the Pantanal floodplain are associated with habitats diversity that is regulated by the annual and pluriannual flood pulse dynamics (Junk et al., 2006). Thus, the relevance of the Pantanal has been attractive to many naturalists and researchers who focus on elucidate general aspects related to the taxonomy, biogeography and ecology of birds. In 1825, the Austrian naturalist Johann Natterer, coming from the south of Goiás, entered the Pantanal region from Cuiabá on what would be the first scientific expedition to the floodplain in the region of Cáceres, state of Mato Grosso (Tubelis & Tomas, 2003a, b). Subsequently, Alfredo Borelli and Herbert H. Smith coordinated expeditions around Corumbá and Porto Murtinho in Mato Grosso do Sul (Allen, 1891, 1892, 1893; Salvadori, 1895, 1900; Straube, 2010). In the 20th century, the Roosevelt-Rondon expeditions took place in the former state of Mato Grosso (Naumburg et al., 1930), those of James AG Rehn occurred in Descalvados (Stone & Roberts, 1934), and those of the Zoology Museum of the University of São Paulo were located in some locations in the Pantanal region (Pinto, 1932, 1938, 1940, 1944). Between 1940 and 1960, expeditions were carried out by national institutions in the north, the center, and along the meridian of São Paulo; in addition, expeditions were made by the Museum of Fauna (former Brazilian Institute of Forestry Development) from Fazenda Descalvados, Mato Grosso (Tubelis & Tomas, 2003b), and a multitude of contemporary authors such as Antas (1983), Munn et al. (1989), Yamashita & Valle (1990), Guedes (1993), Antas (1994), Willis (1995), Guedes & Harper (1995), Antas & Nascimento (1996), Oliveira (1997), Yamashita (1997), Pinho (1998), and Tubelis & Tomas (1999) focused on the biology of species and communities through capture, direct observation, and identification of vocalizations (Tubelis & Tomas, 2003b). Additional inventories and records were collated by Weinberg (1984), Antas et al. (1986), Cintra & Yamashita (1990), Willis & Oniki (1990), Lago-Paiva & Willis (1994), Pacheco & Bauer (1994), and Strüssmann (1998).

Although the contribution of ornithological information about this vast perimeter is considered reasonable for an understanding of the records and distribution patterns, there is still much information from other ornithological initiatives carried out in the region that has not been adequately catalogued or considered. The gaps begin with Georg von Langsdorff and his great expedition (1826-1828), whose results, although known to exist, are considered of minimal impact. Among others, the collections of Emilie Snethlage in the region of Corumbá in 1928 and of Alexander Daveron along the Paraguay River (including the region of Cáceres) in 1931, each representing an impressive number of specimens that are maintained to this day by the Museum National of Rio de Janeiro (UFRJ) and the United States National Museum (Smithsonian Institution), respectively, stand out as deserving of an in-depth analysis (Lopes et al., 2016).

A large part of the true richness of the Pantanal avifauna remains unknown due to the lack of studies in many newly undiscovered regions and, especially, by the divergence of opinion among the various researchers working in the region. These occur largely due to the lack of criteria in examining records, both regard to the reliability of the identifications and in the precise geographical allocation of a species.

Brown-Jr. (1986) prepared the first list of birds found in the Upper Paraguay Basin, counting 309 species, and Coutinho et al. (1997) increased this number to 656 species for the Pantanal. However, in both cases, the locations were not georeferenced and the species occurring in the adjacent plateaus were also included in the lists, a fact that made geographic retrieval and data measurement impossible.

Subsequently, Tubelis & Tomas (2003a) developed a robust and judicious 463 species list, based on records available in the literature, specimens deposited in museums in Brazil and abroad, and new field data. Junk et al. (2006) mentioned 766 bird species in the Pantanal region, 390 of which are considered to be currently present in the floodplain; however, other records do not present adequate supporting documentation for this claim. A list generated by the Brazilian Institute of Environmental and Renewable Energy Resources (IBAMA, 2007) based solely on data published by Brown-Jr. (1986) while disregarding other available publications, indicates only 290 species for the Pantanal region, thereby severely underestimating the diversity of birds occurring in the floodplains.

According to Nunes et al. (2008), if one considers all available data for Pantanal avifauna, the number of species can exceed 730. However, these authors only considered 553 species for the Pantanal region, with a caveat that the occurrence of at least 200 species (27.4%) is questionable due to its distribution restriction on adjacent plateaus. Tomas et al. (2008) mentioned more
than 800 species of birds in the Upper Paraguay Basin (Brazil, Bolivia, and Paraguay) of which, at least, 567 had already been recorded in the Brazilian Pantanal region. Petermann (2010) notes out between 469 and 522 species for the Pantanal region, whereas Nunes (2011a) related the occurrence of 582 species for the lowland.

Field guides, such as that by Gwynne et al. (2010), indicate a richness of 740 species of birds in central Brazil and, among these, 496 were credited by these authors to the Pantanal region. Pivatto & Bernardon (2012) and Cintra (2014) published guides for the identification of Pantanal avifauna and listed 455 and 523 species for the region, respectively.

Despite being relevant contributions, most of the publications cited here have questionable records and, in some cases, are based on vague geographical limits, thereby making it difficult the understanding of birds occurring in the Pantanal. Thus, in this study, we aim to present a consolidated list of birds for the lowland of the Brazilian Pantanal, obtained through data collection in the field as well as through the compilation and review of a wide range of reliable historical and contemporary records to provide a safer reference list.

**MATERIAL AND METHODS**

**The Pantanal floodplains: location, landscape, and environment**

The Pantanal is one of the largest continuous wetlands on the planet. It is located in the center of South America and is cover over more than 140,000 km² across the Upper Paraguay River Basin and its tributaries that drain the Cerrado region of Central Brazil, and areas of Bolivia’s Chaco region and Paraguay (Harris et al., 2005). In Brazil, the Pantanal extends for approximately 250 km in an east-west direction and 450 km in a north-south direction and, despite several elevations that exist inside, many of them isolated, the altitude varies only from 60 to 150 m (Hamilton et al., 1996).

The landscape in the floodplain of the Brazilian Pantanal is complex, diversified, and occurs in mosaics with diverse phytophysionomies and ecological situations that are ordered by topographic gradients and flood pulses (Junk et al., 2014). Natural vegetation of the region is influenced by the adjacent phytogeographic provinces such as Cerrado (Brazilian savanna), Chaco (dry woodland or dry forest), Amazon and Atlantic Forest (Nunes & Tomas, 2004a; Silva & Santos, 2005).

The coverage and land use of the Pantanal region is currently made up of natural non-forest formations (grasslands and marshes of perennial or seasonal vegetation) and forest (savanna and seasonal forest) to spaces used by agriculture (pastures and monocultures), in addition to various bodies of water of different nature (Miranda et al., 2017; Souza-Jr. et al., 2020). All these landscape units are regulated by annual and multi-annual rain cycles that intersect with rainy and dry periods and promote extreme events of floods and droughts, the latter often being combined with large fires (Nunes Da Cunha & Junk, 2004). In general, the Pantanal climate is predominantly hot and humid, with an average annual rainfall of 1,500 mm and a maximum average temperature of 32°C and a minimum of 20°C (Alvares et al., 2014).

In this study, we considered the area recognized as the floodplain of the Brazilian Pantanal region (Fig. 1) within whose limits the respective records of the occurrence of the various bird species were plotted. It encompasses a perimeter of 150,000 km² exclusively in the Brazilian territory, 4.6% of which is represented by protected areas including 18 private reserves, 1 national park, 3 state parks, 1 municipal park, 1 environmental protection area, and 1 ecological station (Brazil, 2020). For the elaboration of our database, 199 locations in the states of Mato Grosso and Mato Grosso do Sul that presented one or more records of avifauna were evaluated.

**Data collection**

For the elaboration of the consolidated list of birds of the Pantanal floodplain, we considered the records created by us in the last decades, whether from systematic samplings or not: Allen (1891, 1892, 1893); Naumburg et al. (1930); Naumburg (1935); Zimmer (1933); Jesus & Lima (2003); Antas & Palo-Jr. (2004); Donatelli (2005); Pinho (2005); Cestari (2006a, b); Straube et al. (2006a, b; 2007); Melo et al. (2007); Mestre (2007); Straube et al. (2007); Amaral & Ragusa-Netto (2008); Donatelli & Ubaída (2008); Melo & Teribeli (2008); Nunes et al. (2008); Pivatto et al. (2008); Ubaída & Donatelli (2008); Vasconcelos et al. (2008); Wittaker et al. (2008); Antas & Palo-Jr. (2009); Chiarravalloti et al. (2009); Nunes et al. (2009); Mestre et al. (2010); Nunes (2010); Nunes et al. (2010); Evangelista et al. (2010); Serrano (2010); Signor & Pinho (2010); Ubaída et al. (2010); Yabe et al. (2010); Brandão et al. (2011); Nunes (2011a, b); Nunes et al. (2011); Leuzinger (2011); Ribas et al. (2011); Straube & Melo (2011); Emanuel (2013); Nunes et al. (2013); Kantek & Onuma (2013); Ubaída & Antas (2013); Donatelli et al. (2014); Nunes (2015); Severo-Neto et al. (2015); Lopes et al. (2016); Benites et al. (2017); Donatelli et al. (2017); Severo-Neto et al. (2017); Vittorino et al. (2017); Nabuco et al. (2018); Nunes et al. (2018); Frota et al. (2020a) and Benites & Mamede (in press). In all, 199 locations were visited, 29 of which could not be georeferenced. The information on these locations, period of observations, and authors of the records can be accessed in Table S1. Also, the occurrences are mentioned in the literature (Rv/sP), in the authors’ field works (Rv/shNP), and in the form of specimens deposited in museums and institutional ornithological collections in Brazil and abroad (ExM). In addition, data in the form of photographic records deposited in institutional museums (FoM), cited in scientific journals (FoP) or private collection (FoAP), photographic records (FoI) and sound (ASI) records available on internet data platforms, audiovisual (ViM) and sound records (ASM) deposited in institutional museums, and sound records (ASI) deposited in data platforms are available for online consultation (Carlos et al., 2010).
Figure 1. Localities with ornithological inventories in Pantanal wetland. The circles correspond to different sample sites, whose geographic coordinates can be found in Table S1. The dark gray spots correspond to burned areas in 2020 fire gray spots correspond to burned areas in 2020 fire according to ALARMES-HISTÓRICO (LASA/UFRJ, 2021; Pinto et al., 2020).
Data on specimens deposited in institutional museums in Brazil and abroad were obtained by consulting Tubelis & Tomas (2003a) and the website (Vertnet, 2021). Sound archives deposited in institutional museums obtained from the Arquivo Sonoro Prof. Elias Coelho (ASEC), from the Federal University of Rio de Janeiro and at the Neotropical Fonoteca Jacques Vielliard (FNJV) of the Zoology Museum of the State University of Campinas. Regarding the photographic and sound records available on digital media, we evaluated those hosted until Mach 2021 in the WikiAves (WikiAves, 2021 – http://www.wikiaves.com), Xeno-canto (Xeno-Canto, 2021 – https://www.xeno-canto/databases.org), and Visual Resources of Ornithology/VIREO (VIREO, 2021 – http://vireo.anssp.org) databases. Records in municipalities that include stretches of plateau (e.g., Corumbá, Miranda, Aquidauana, Coxim, Rio Verde de Mato Grosso, Cáceres, and Santo Antônio do Leverger) were carefully investigated by confirming their locations with the authors to ensure that only records collected from the floodplain were included in the study. When such records were cited in publications without specific details on location, the species were not included in the main list.

Data requirements for inclusion into inventory lists

We adopted the taxonomic classification proposed by the Brazilian Ornithological Records Committee (Pacheco et al. 2021). The primary list, which was composed of species with at least one occurrence record in the Pantanal floodplain provided with documentary evidence, i.e., item(s) available for independent consultation as a full or partial specimen, photograph, and audio/video recording, which allow the safe and indisputable determination of the taxon. The secondary list includes species with one or more visual and/or sound records in the Pantanal floodplain, but whose documentary evidence is unknown or unavailable. In this context, the filtering protocol is the detailing of the information allusive to the record, necessarily associated with consistency of the distribution and dispersion patterns of the species based on documentary evidence. The primary and secondary lists constitute the main list.

In addition to extinct taxa of nature or those not validated as full species, some species that, although mentioned in some of the consulted sources, presented questionable records with incompatible distribution and/or occurrence only marginal to the Pantanal floodplain were excluded and are present in the tertiary list. In brief, the main list includes only the species that have been proven to occur within the defined geographical limits, based on the following superior evidence, in hierarchical order: ExM, FoM, FoP, FoI, ViM, ASM, and ASI (for details, see Carlos et al., 2010).

Species categorization

The species were categorized according to their conservation status based on the global redlist (Handbook of the Birds of the World & BirdLife International, 2020): Deficient Data (DD), Near Threatened (NT), vulnerable (VU), Endangered (EN), and Critically endangered (CR). Also, we considering the National lists of threatened species (ICMBio, 2014). In addition, we highlight species that show a global population decline (Handbook of the Birds of the World & BirdLife International, 2020). Based on the lists of migratory birds proposed by Nunes & Tomas (2008) and Somenzari et al. (2018), the species were initially distinguished as intercontinental (INTER) or intracontinental (INTRA) migrants. The former includes species that make large displacements from the northern hemisphere (Canada and northern USA) towards southern South America (Patagonia). The latter category includes species that move from the southernmost portions of South America towards its northernmost regions (mainly Amazonia) and vice versa.

RESULTS AND DISCUSSION

According to our study, the avifauna of the Pantanal floodplain is composed of a total of 617 species, of which 571 (92%) have supporting records of occurrence (primary list) and 46 still lack documentation (secondary list) (Tables 1 and S1). In the tertiary list, we include 63 species whose records were based questionable information or incompatible with the floodplain region (Table 2). Of the migratory species occurring in Brazil, 183 species use the Pantanal floodplain during migratory movements. Most are composed of southern migrants (140 species), especially those moving from the southern portions of South America towards Central Brazil and the Amazon. In this group, the most important species belong to the family Tyrannidae (37 species), genus Sporophila (15 species), and family Hirundinidae (7 species). The northern migrants add up to 43 species, almost half (45%) the number being formed by members of family Scolopacidae. Species linked to aquatic environments account for 38% of the migrant species and those dependent on native grasslands in good condition account for 12% (21 species).

With regard to conservation, 25 species are included in some category of threat in the lists of threatened species with global extinction (Handbook of the Birds of the World & BirdLife International, 2020); of these, four are classified as “Endangered” and “Critically Endangered”. In the National territory (ICMBio, 2014), three and two species were classified as “Endangered” and “Critically Endangered”, respectively. In the global and national lists, 22 and 13 species are considered “Near Threatened”, respectively. In addition, 13 species are inserted in the category “Data Deficient”, which reinforces the unknown situation of their populations that are possibly subject to numerous types of threats.

The number of species listed here for the Pantanal wetland represents 32% of all avifauna known to the Brazilian territory (Pacheco et al., 2021). In the present study, 153 species were add to the previous list proposed by Tubelis & Tomas (2003a). This reflects the importance of the biome, as part of the national terri-
Table 1. Main list of bird species occurring in the Pantanal, Brazil. Taxa highlighted in square brackets are on the secondary list and lack adequate supporting documentation. Conservation status: * (globally declining population), NT (Near Threatened with extinction), VU (Vulnerable), EN (Endangered), CR (Critically Endangered), PE (Probably extinct), DD (Data Deficient). GL (Global List/Handbook of the Birds of the World & BirdLife International, 2020), BL (Brazilian List/ICMBio, 2014). Status of migration: INTRA (intracontinental migrant), INTER (intercontinental migrant). Evidence: ExM (specimen deposited in a national institutional museum and/or abroad), Rv/sP (visual and/or sound records quoted in a scientific journal), Rv/sNP (visual and/or sound records obtained by the authors and not published), Fol (photo published on the internet), FoAP (photo in particular collection); ASI (sound file available on the internet).

| Taxon | Conservation | Migration | Evidence |
|-------|--------------|-----------|----------|
| **Rheiformes** | | | |
| Rhea americana (Linnaeus, 1758) | * NT (GL) | ExM, Rv/sP, Rv/sNP, Fol, ASI |
| **Tinamiformes** | | | |
| Tinamus mazinac (Temminck, 1815) | * VU (GL), VU (BL) | | ASI |
| Crypturellus undulatus (Temminck, 1815) | * | ExM, Rv/sP, Rv/sNP, Fol, ASI |
| Crypturellus parvirostris (Wagler, 1827) | * | ExM, Rv/sP, Rv/sNP, Fol |
| Crypturellus tataupa (Temminck, 1815) | * | ExM, Rv/sP, Rv/sNP, Fol |
| Rhynchos corax (Temminck, 1815) | * | ExM, Rv/sP |
| **Anseriformes** | | | |
| Anhima cornuta (Linnaeus, 1766) | * | Rv/sP, Rv/sNP, Fol |
| Chauna torquata (Oken, 1816) | * | ExM, Rv/sP, Rv/sNP, Fol, ASI |
| **Anatidae** | | | |
| Dendrocygna bicolor (Vieillot, 1816) | * | ExM, Rv/sP, Fol |
| Dendrocygna viduata (Linnaeus, 1766) | INTRA | ExM, Rv/sP, Rv/sNP, Fol, ASI |
| Dendrocygna autumnalis (Linnaeus, 1758) | INTRA | ExM, Rv/sP, Rv/sNP, Fol |
| Coscoroba coscoroba (Molina, 1782) | INTRA | ExM, Rv/sP, Rv/sNP, Fol |
| Neochen jubata (Spix, 1825) | INTRA | ExM, Rv/sP, Fol, ASI |
| Neochen jubata (Spix, 1825) | INTRA | ExM, Rv/sP, Rv/sNP, Fol, ASI |
| **Podicipediformes** | | | |
| Rollandia rolland (Quoy & Gaimard, 1824) | * | Rv/sP |
| Tachybaptus dominicus (Linnaeus, 1766) | INTRA | ExM, Rv/sP, Fol |
| Podocia alba (Linnaeus, 1766) | INTRA | ExM, Rv/sP, Rv/sNP, Fol |
| Podicephorus major (Spix, 1825) | INTRA | ExM, Rv/sP, Fol |
| **Columbiformes** | | | |
| Columba livia (Gmelin, 1789) | * | ExM, Rv/sP, Fol |
| Patagioenas speciosa (Gmelin, 1789) | INTRA | ExM, Rv/sP, Fol |
| Patagioenas picazuro (Temminck, 1813) | INTRA | ExM, Rv/sP, Rv/sNP, Fol, ASI |
| Patagioenas cyanomelas (Bonnaterre, 1792) | INTRA | ExM, Rv/sP, Rv/sNP, Fol, ASI |
| [Patagioenas subvinacea (Lawrence, 1868)] | * VU (GL) | Rv/sP |
| Taxon                                      | Status | Conservation | Migration | Evidence |
|--------------------------------------------|--------|--------------|-----------|----------|
| Geotrygon montana (Linnaeus, 1758)        |        |              | Rv/sP, Rv/sNP, FoAP |
| Leptotila verreauxii Bonaparte, 1855       |        |              | EvM, Rv/sP, Rv/sNP, Fol, ASI |
| Leptotila rufaflaxilla (Richard & Bernard, 1792) |        |              | EvM, Rv/sP, Rv/sNP, Fol, ASI |
| Zenaida auricularis (Des Murs, 1847)       |        |              | INTRA |
| Claravis pretiosa (Ferrari-Perez, 1886)    |        |              | EvM, Rv/sP, Rv/sNP, Fol, ASI |
| Urophaga campstros (Spar, 1825)           |        |              | EvM, Rv/sP, Rv/sNP, Fol, ASI |
| COLUMBIA MINUTA (Linnaeus, 1766)           |        |              | EvM, Rv/sP, Rv/sNP, Fol, ASI |
| COLUMBIA squamata (Lesson, 1833)           |        |              | EvM, Rv/sP, Rv/sNP, Fol, ASI |
| COLUMBIA picui (Temminck, 1813)            |        |              | EvM, Rv/sP, Rv/sNP, Fol, ASI |
| guira guira (Gmelin, 1788)                 |        |              | EvM, Rv/sP, Rv/sNP, Fol, ASI |
| Crotophaga major (Gmelin, 1788)            |        |              | EvM, Rv/sP, Rv/sNP, Fol, ASI |
| Crotophaga ani (Linnaeus, 1758)            |        |              | EvM, Rv/sP, Rv/sNP, Fol, ASI |
| Antrostomus rufus (Boddaert, 1783)         |        |              | EvM, Rv/sP, Rv/sNP, Fol, ASI |
| Luroctes strauch (Spar, 1825)              |        |              | EvM, Rv/sP, Rv/sNP, Fol, ASI |
| Nyctiphrynus ocellatus (Tschudi, 1844)     |        |              | EvM, Rv/sP, Rv/sNP, Fol, ASI |
| Antrostomus rufus (Boddaert, 1783)         |        |              | EvM, Rv/sP, Rv/sNP, Fol, ASI |
| Nyctidromus albicollis (Gmelin, 1789)      |        |              | EvM, Rv/sP, Rv/sNP, Fol, ASI |
| Hydropsalis torquata (Gmelin, 1789)        |        |              | EvM, Rv/sP, Rv/sNP, Fol, ASI |
| Nyctidromus nasutus (Gould, 1861)          |        |              | EvM, Rv/sP, Rv/sNP, Fol, ASI |
| Nyctidromus nasutus (Gould, 1861)          |        |              | EvM, Rv/sP, Rv/sNP, Fol, ASI |
| Nannochordeiles pusillus (Gould, 1861)     |        |              | EvM, Rv/sP, Rv/sNP, Fol, ASI |
| Podager nacunda (Veillot, 1817)            |        |              | EvM, Rv/sP, Rv/sNP, Fol, ASI |
| Chordeiles minor (Forster, 1771)           |        |              | EvM, Rv/sP, Rv/sNP, Fol, ASI |
| [Chordeiles acutipennis (Herrmann, 1783)]   |        |              | EvM, Rv/sP, Rv/sNP, Fol, ASI |
| Apodidae                                   |        |              | EvM, Rv/sP, Rv/sNP, Fol, ASI |
| Cygnus olor (Strebel, 1848)                |        |              | EvM, Rv/sP, Rv/sNP, Fol, ASI |
| Streptoprocne zonaris (Shaw, 1796)         |        |              | EvM, Rv/sP, Rv/sNP, Fol, ASI |
| Cheeretina melanispinis (Hollmayo, 1907)    |        |              | EvM, Rv/sP, Rv/sNP, Fol, ASI |
| Stenocorax semitorquatus (Cassin, 1853)    |        |              | EvM, Rv/sP, Rv/sNP, Fol, ASI |
| Phaethornis ruber (Linnaeus, 1758)         |        |              | EvM, Rv/sP, Rv/sNP, Fol, ASI |
| Phaethornis subniger (Todd, 1915)          |        |              | EvM, Rv/sP, Rv/sNP, Fol, ASI |
| Phaethornis pretrei (Lesson & Delattre, 1839) |        |              | EvM, Rv/sP, Rv/sNP, Fol, ASI |
| Glyptococcyx leucomelas (Veillot, 1817)    |        |              | EvM, Rv/sP, Rv/sNP, Fol, ASI |
| Anthracothorax nigricollis (Vieillot, 1817) |        |              | EvM, Rv/sP, Rv/sNP, Fol, ASI |
| Lophornis gouldi (Lesson, 1832)            |        |              | EvM, Rv/sP, Rv/sNP, Fol, ASI |
| Taxon                              | Status       | Conservation | Migration | Evidence |
|-----------------------------------|--------------|--------------|-----------|----------|
| Lophornis magnificus (Vieillot, 1817) |              |              |           |          |
| Helnoramuris longirostris (Audebert & Vieillot, 1801) |              |              |           |          |
| Helnoramuris furcifer (Shaw, 1812) |              |              |           |          |
| Calliphlox amethystina (Boddaert, 1783) |              |              |           |          |
| Chlorostilbon lucidus (Shaw, 1812) |              |              |           |          |
| Thalurania furcata (Gmelin, 1788) |              |              |           |          |
| Eupetomena macroura (Gmelin, 1788) |              |              |           |          |
| Aphanoeca cromlech (Vieillot, 1818) |              |              |           |          |
| Chrysuronia versicolor (Vieillot, 1818) |              |              |           |          |
| Leucochloris albicollis (Vieillot, 1818) |              |              |           |          |
| Chionomesa fimbriata (Gmelin, 1788) |              |              |           |          |
| Hylocharis sapphirina (Gmelin, 1788) |              |              |           |          |
| Hylocharis chrysura (Shaw, 1812) |              |              |           |          |
| Chlorestes cyanus (Vieillot, 1818) |              |              |           |          |
| Aramidas guarauna (Linnaeus, 1766) | INTRA        | ExM, Rv/sP, Rv/sNP, Fol | ASI       |          |
| Porphyrion martinica (Linnaeus, 1766) |              |              |           |          |
| Porphyrion flavirostre (Gmelin, 1789) |              |              |           |          |
| Rufinalis viridis (Status Muller, 1776) |              |              |           |          |
| Lateralus flaviventer (Boddaert, 1783) |              |              |           |          |
| Lateralus melanophanus (Vieillot, 1819) |              |              |           |          |
| Lateralus exilis (Temminck, 1831) |              | ExM, Rv/sP, Rv/sNP, Fol | ASI       |          |
| [Laterallus xenopterus Conover, 1934] |              |              |           |          |
| [Coturnicops notatus (Gould, 1841)] |              | ExM, Rv/sP, Rv/sNP, Fol | ASI       |          |
| Mustelobius albidus (Vieillot, 1819) |              | ExM, Rv/sP, Rv/sNP, Fol | ASI       |          |
| [Alopecus erythropus (Sclater, 1867)] |              | ExM, Rv/sP, Rv/sNP | ASI       |          |
| Pardinellus maculatus (Boddaert, 1783) |              | ExM, Rv/sP, Fol, ASI |           |          |
| Pardinellus nigricans (Vieillot, 1819) |              | ExM, Rv/sP, Rv/sNP, Fol | ASI       |          |
| Aramidas ypecaha (Vieillot, 1819) |              | ExM, Rv/sP, Rv/sNP, Fol | ASI       |          |
| Aramidas capensis (Status Muller, 1776) |              | ExM, Rv/sP, Rv/sNP, Fol | ASI       |          |
| Gallinula galeata (Lichtenstein, 1918) |              | ExM, Rv/sP, Rv/sNP | ASI       |          |
| [Fulica leucophras (Vieillot, 1817)] |              | Rv/sNP       | ASI       |          |
| Charadriiformes |              |              |           |          |
| Charadriidae |              |              |           |          |
| Pluvialis dominica (Status Muller, 1776) |              |              |           |          |
| [Pluvialis squatarola (Linnaeus, 1758)] |              |              |           |          |
| Vanellus cayanus (Latham, 1790) |              | ExM, Rv/sP, Rv/sNP, Fol | ASI       |          |
| Vanellus chilensis (Milne, 1822) |              | ExM, Rv/sP, Rv/sNP, Fol | ASI       |          |
| [Charadrius semipalmatus Bonaparte, 1825] |              | ExM, Rv/sP, Rv/sNP, Fol | ASI       |          |
| Charadrius collaris (Vieillot, 1818) |              | ExM, Rv/sP, Rv/sNP, Fol | ASI       |          |
| Recurvirostridae |              |              |           |          |
| Himantopus mexicanus (Status Muller, 1776) |              |              |           |          |
| Himantopus melanus (Vieillot, 1817) |              | ExM, Rv/sP, Fol |           |          |
| Scolopacidae |              |              |           |          |
| Bartramia longicauda (Bechstein, 1812) |              | ExM, Rv/sP, Rv/sNP, Fol | ASI       |          |
| Numenius borealis (Forster, 1772) |              | ExM, Rv/sP | ASI       |          |
| [Numenius hispanicus Latham, 1790] |              | ExM, Rv/sP, Rv/sNP, Fol | ASI       |          |
| Limosa haemastica (Linnaeus, 1758) |              | ExM, Rv/sP, Rv/sNP, Fol | ASI       |          |
| [Arenaria interpres (Linnaeus, 1758)] |              | ExM, Rv/sP, Rv/sNP, Fol | ASI       |          |
| [Calidris canutus (Linnaeus, 1758)] |              | ExM, Rv/sP, Rv/sNP, Fol | ASI       |          |
| Calidris himantopus (Bonaparte, 1826) |              | ExM, Rv/sP, Fol |           |          |
| Calidris alba (Pallas, 1764) |              | ExM, Rv/sP, Fol |           |          |
| Calidris bartti (Goos, 1861) |              | ExM, Rv/sP, Fol |           |          |
| [Calidris minuta (Vieillot, 1819)] |              | ExM, Rv/sP, Fol |           |          |
| Calidris fusca (Vieillot, 1819) |              | ExM, Rv/sP, Rv/sNP, Fol | ASI       |          |
| Calidris subruficollis (Vieillot, 1819) |              | ExM, Rv/sP, Rv/sNP, Fol | ASI       |          |

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| Taxon                     | Status          | Conservation |
|--------------------------|-----------------|--------------|
| Calidris melanotos      | INTER           | ExM, Rv/sP, Rv/snP, FoP, Fol |
| Calidris pusilla        | * NT (GL), EN (BL) | INTER       |
| Gallinago undulata     | INTER           | ExM, Rv/sP |
| Gallinago paraguausor  | INTER           | ExM, Rv/sP, Rv/snP, Fol |
| Phalopus tricolor      | INTER           | ExM, Rv/sP |
| Actitis macularius     | INTER           | ExM, Rv/sP, Rv/snP, Fol, ASI |
| Tringa solitaria       | INTER           | ExM, Rv/sP, Rv/snP, Fol, ASI |
| Tringa melanoleuca     | INTER           | ExM, Rv/sP, Rv/snP, Fol, ASI |
| Tringa flavipes        | * INTER         | ExM, Rv/sP, Rv/snP, Fol, ASI |
| Jacana jacama          | INTER           | ExM, Rv/sP, Rv/snP, Fol, ASI |
| Xema sabini            | INTER           | Fol          |
| Chroicocephalus maculipennis | INTRA   | Rv/sP      |
| Rynchops niger        | INTER           | ExM, Rv/sP, Rv/snP, ASI |
| Sterna superciliants   | INTER           | ExM, Rv/sP, Rv/snP, Fol |
| Phoebus simplex       | INTER           | ExM, Rv/sP, Rv/snP, Fol, ASI |
| Chlidonias niger      | INTER           | ExM, Rv/sP, FoP |
| Sterna hirundo        | INTER           | Rv/sP       |
| Eurypterygiformes      |                 |              |
| Eurypterygidae         |                 |              |
| Ciconiiformes          |                 |              |
| Ciconiidae             |                 |              |
| Anhingidae             |                 |              |
| Nannopterus brasiliensis | INTRA   | ExM, Rv/sP, Rv/snP, Fol, ASI |
| Pelecainiformes        |                 |              |
| Ardeidae               |                 |              |
| Tigrisoma lineatum | INTER           | ExM, Rv/sP, Rv/snP, Fol, ASI |
| Agapornis agami       | INTER           | ExM, Rv/sP, Rv/snP, FoP, ASI |
| Coccleus cocchlietus  | INTER           | ExM, Rv/sP, Rv/snP, Fol, ASI |
| Zehirus undulatus      | INTER           | ExM, Rv/sP, Rv/snP, FoP |
| Bubulcus buehleri      | INTER           | Rv/sP, FoP |
| Nycticorax nisus       | INTER           | ExM, Rv/sP, Rv/snP, Fol, ASI |
| Butorides striata      | INTER           | ExM, Rv/sP, Rv/snP, Fol, ASI |
| Ardea cocco          | INTER           | ExM, Rv/sP, Rv/snP, Fol, ASI |
| Ardea alba           | INTER           | ExM, Rv/sP, Rv/snP, Fol, ASI |
| Syrinx cachorhynchos  | INTER           | ExM, Rv/sP, Rv/snP, Fol, ASI |
| Phalacrocorax pygius  | INTER           | ExM, Rv/sP, Rv/snP, Fol, ASI |
| Egretta thula         | INTER           | ExM, Rv/sP, Rv/snP, Rv/sNP, FoP |
| Threskiornithidae      | INTER           | ExM, Rv/sP, Rv/snP, Rv/sNP, FoP, Fol |
| Platalea ajaja        | INTER           | ExM, Rv/sP, Rv/snP, Rv/sNP, FoP, Fol |

**Evidence**

- ExM: Exposed to Medium levels of human disturbance
- Rv/sP: Regionally Vulnerable / Near Threatened
- Rv/sNP: Regionally Vulnerable / Near Threatened
- FoP: Fully protected
- FoI: Fully inadequately protected
- ASI: Asian Supplementary Information
| Taxon                             | Status | Conservation | Migration | Evidence |
|----------------------------------|--------|--------------|-----------|----------|
| **Cathartiformes**               |        |              |           |          |
| **Cathartidae**                  |        |              |           |          |
| Sarcoramphus papa (Linnaeus, 1758) | * NT (BL) | ExM, Rv/sP, Rv/sNP, FoP |          |          |
| Coragyps atratus (Bechstein, 1793) |          | ExM, Rv/sP, Rv/sNP, FoL |          |          |
| Cathartes aura (Linnaeus, 1758)  |          | ExM, Rv/sP, Rv/sNP, FoL |          |          |
| Cathartes burnouanianus Cassin, 1845 |          | Rv/sP, Rv/sNP, FoL |          |          |
| **Accipitriformes**              |        |              |           |          |
| Pandionidae                      |        |              |           |          |
| Pandion haliaetus (Linnaeus, 1758) | INTER | ExM, Rv/sP, Rv/sNP, FoI |          |          |
| **Accipitridae**                 |        |              |           |          |
| Gampsonyx swainsonii/Vigors, 1825 |       | ExM, Rv/sP, Rv/sNP, FoL |          |          |
| Elanus leucurus (Vieilliot, 1818) | INTRA  | ExM, Rv/sP, FoP, FoI |          |          |
| Chondrohierax uncinatus (Temminck, 1822) |          | ExM, Rv/sP, Rv/sNP, FoL, ASI |          |          |
| Leptodon cayanensis (Vieilliot, 1817) | *       | ExM, Rv/sP, Rv/sNP, FoL, AsI |          |          |
| Elanoides forficatus (Linnaeus, 1758) | INTER | ExM, Rv/sP, Rv/sNP, FoL |          |          |
| Harpa harpyje (Linnaeus, 1758) | * NT (GL), VU (BL) | Rv/sP, FoP, FoL |          |          |
| Spizaetus tyrannus (Wied, 1820)  | *      | ExM, Rv/sP, FoP, FoL |          |          |
| Spizaetus melanolucus (Vieilliot, 1816) |          | ExM, Rv/sP, Rv/sNP, FoL |          |          |
| Spizaetus ornatus (Gaudin, 1800) | * NT (GL), NT (BL) | Rv/sP, FoL |          |          |
| Busarellus nigricollis (Latham, 1790) | *      | ExM, Rv/sP, Rv/sNP, FoL, ASI |          |          |
| Rastrhynchos socialis (Vieilliot, 1817) |          | ExM, Rv/sP, Rv/sNP, FoL, ASI |          |          |
| Helvolestes hamatus (Temminck, 1821) | *      | Rv/sP, FoL |          |          |
| Harpagus bidentatus (Latham, 1790) | *      | Rv/sP, FoL |          |          |
| Harpagus diodon (Temminck, 1823) | *      | Rv/sP, Rv/sNP, FoL |          |          |
| Actina mississippiensis (Wilson, 1811) | INTER | Rv/sP, Rv/sNP, FoL |          |          |
| Actina plumbea (Gmelin, 1788) | *      | ExM, Rv/sP, Rv/sNP, FoL, ASI |          |          |
| Cercus buffini (Gmelin, 1788) | *      | ExM, Rv/sP, Rv/sNP, FoL, ASI |          |          |
| Hienaspiza superciliosa (Linnaeus, 1766) | * | Rv/sP, Rv/sNP, FoL |          |          |
| Accipiter poliopterus (Temminck, 1824) | * NT (GL), DD (BL) | Rv/sP, FoP, FoL |          |          |
| Accipiter striatus Vieillot, 1808 |       | Rv/sP, Rv/sNP, FoL |          |          |
| Accipiter bicolor (Vieillot, 1817) |       | ExM, Rv/sP, Rv/sNP, FoL |          |          |
| Genosops caesiolascens (Vieilliot, 1817) | * | ExM, Rv/sP, Rv/sNP, FoL |          |          |
| Heterospiza meridianalis (Latham, 1790) | * | ExM, Rv/sP, Rv/sNP, FoL |          |          |
| Urubitinga urubitinga (Gmelin, 1788) |       | ExM, Rv/sP, Rv/sNP, FoL, ASI |          |          |
| Urubitinga coronata Vieillot, 1817 | * EN (GL), EN (BL) | Rv/sP, Rv/sNP, FoL, FoL, ASI |          |          |
| Rupornis magnirostris (Gmelin, 1788) |       | ExM, Rv/sP, Rv/sNP, FoL |          |          |
| Parabuteo uncinatus (Temminck, 1824) | * | Rv/sP, FoP, FoL |          |          |
| Genanoestes albocaudatus (Vieillot, 1816) |       | ExM, Rv/sP, Rv/sNP, FoL |          |          |
| Genanoestes melanoleucus (Vieillot, 1819) |       | ExM, Rv/sP, FoP, FoL |          |          |
| Pseudostator albicollis (Latham, 1790) | * | ExM, Rv/sP, Rv/sNP, FoL, FoAP |          |          |
| Buteo nitidus (Latham, 1790) | *      | ExM, Rv/sP, Rv/sNP, FoL |          |          |
| [Buteo platypterus (Vieillot, 1823)] |       | Rv/sP |          |          |
| Buteo brachyurus Vieillot, 1816 | INTER | ExM, Rv/sP, Rv/sNP |          |          |
| Buteo swainsonii Bonaparte, 1838 | INTER | FoP |          |          |
| Buteo albonotatus Kaup, 1847 |       | Rv/sP, Rv/sNP, FoL |          |          |

**Strigiformes**

**Tytonidae**

| Taxon                             | Status | Conservation | Migration | Evidence |
|----------------------------------|--------|--------------|-----------|----------|
| Tyto furcata (Temminck, 1827) |       | ExM, Rv/sP, Rv/sNP, FoL |          |          |

**Strigidae**

| Taxon                             | Status | Conservation | Migration | Evidence |
|----------------------------------|--------|--------------|-----------|----------|
| Megascops choliba (Vieillot, 1817) |       | ExM, Rv/sP, Rv/sNP, FoL, ASI |          |          |
| Megascops usto (Sclater, 1858) |       | ExM, Rv/sP, Rv/sNP, FoL, ASI |          |          |
| Pulatrix perspicillata (Latham, 1790) | * | ExM, Rv/sP, Rv/sNP, FoL |          |          |
| Bubo virginianus (Gmelin, 1788) |       | ExM, Rv/sP, Rv/sNP, FoL, ASI |          |          |
| Strix vegata (Cassin, 1849) | * | Rv/sP, FoP, FoL |          |          |
| Strix hudsonia Audin, 1800 |       | ExM, Rv/sP, Rv/sNP, FoL |          |          |
| Glaucidium hardyi Vieilland, 1990 |       | ExM, Rv/sP |          |          |
| Glaucidium brasilianum (Gmelin, 1788) | * | ExM, Rv/sP, Rv/sNP, FoL, ASI |          |          |
| Athene cunicularia (Molina, 1782) | * | ExM, Rv/sP, Rv/sNP, FoL |          |          |
| [Asio harrisi (Cassin, 1849)] |       | Rv/sP |          |          |
| Asio clamator (Vieillot, 1808) |       | ExM, Rv/sP, Rv/sNP |          |          |
| Taxon                               | Conservation | Migration | Evidence |
|-------------------------------------|--------------|-----------|----------|
| Asio stigias (Wagler, 1832)         | *            |           | ExM, Rv/sP, Rv/shR, ASI |
| Asio flammeus (Pontoppidan, 1763)   | *            |           | Rv/sP, Fol |
| **Trogoniformes**                   |              |           |          |
| **Trogonidae**                      |              |           |          |
| Trogon melanurus Swainson, 1838     |              |           | ExM, Rv/sP |
| Trogon curucui Linnaeus, 1766       | *            |           | ExM, Rv/sP, Rv/shR, Fol, ASI |
| **Coraciiformes**                   |              |           |          |
| Momotus momota (Linnaeus, 1766)     | *            |           | ExM, Rv/sP, Rv/shR, Fol, ASI |
| **Alcedinidae**                     |              |           |          |
| Megaceryle torquata (Linnaeus, 1766)|              |           | ExM, Rv/sP, Rv/shR, Fol, ASI |
| Chloroceryle amaazoa (Latham, 1790) |              |           | ExM, Rv/sP, Rv/shR, Fol, ASI |
| Chloroceryle aenea (Pallas, 1764)   | *            |           | ExM, Rv/sP, Rv/shR, Fol, ASI |
| Chloroceryle americana (Gmelin, 1788)|              |           | ExM, Rv/sP, Rv/shR, Fol, ASI |
| Chloroceryle indo (Linnaeus, 1766)  | *            |           | ExM, Rv/sP, Rv/shR, Fol, ASI |
| **Galbuliformes**                   |              |           |          |
| **Galbulidae**                      |              |           |          |
| Brachygalba lugubris (Swainson, 1838)|              |           | ExM, Rv/sP |
| Galbula ruficauda Cuvier, 1816      | *            |           | ExM, Rv/sP, Rv/shR, Fol, ASI |
| **Bucconidae**                      |              |           |          |
| Cheledipteria tenebrosa (Pallas, 1782)|              |           | Rv/sP, Rv/shR, Fol |
| Monasa nigritormis (Spix, 1824)     | *            |           | ExM, Rv/sP, Rv/shR, Fol, ASI |
| Novella ruficollis (Tschud., 1844)  |              |           | ExM |
| [Novella rubecula (Spix, 1824)]     | *            |           | Rv/sP |
| Nystalus maculatus (Gmelin, 1788)   |              |           | ExM, Rv/sP, Fol |
| Nystalus striatipectus (Schater, 1854)|              |           | ExM, Rv/sP, Rv/shR, Fol, ASI |
| Nystalus ochracea (Vieillot, 1816)  |              |           | ExM, Rv/sP, Rv/shR, Fol |
| **Piciformes**                      |              |           |          |
| Ramphastos toco Status Muller, 1776 | *            |           | ExM, Rv/sP, Rv/shR, Fol, ASI |
| Ramphastos vitellinus Lichtenstein, 1823| * | VU (GL) | ExM, Rv/sP |
| Pteroglossus inscriptus Swainson, 1822| *            |           | Fol |
| Pteroglossus castanotis Gould, 1834|              |           | ExM, Rv/sP, Rv/shR, Fol, ASI |
| Pteroglossus bitonticus/Vilgos, 1826| * En (GL), NT (BL) |          | Fol |
| **Picidae**                         |              |           |          |
| Picumnus aurifrons Pelzeln, 1870    | *            |           | ExM |
| Picumnus cirrothorax Temminck, 1825 | *            |           | ExM, Rv/sP, Fol |
| Picumnus albogularis d’Orbigny, 1840|              |           | ExM, Rv/sP, Rv/shR, Fol, ASI |
| Melanerpes candidus (Otta, 1796)    |              |           | ExM, Rv/sP, Rv/shR, Fol, ASI |
| Melanerpes cruentatus (Boddaert, 1783)|              |           | ExM, Rv/sP, Rv/shR, Fol, ASI |
| Melanerpes flavifrons (Vieillot, 1818)|              |           | Rv/sP, Fol |
| Melanerpes cactorum (d’Orbigny, 1839)|              |           | ExM, Rv/sP, Rv/shR, Fol, ASI |
| Veniliornis affinis (Swainson, 1821)|              |           | ExM, Rv/shR, Fol |
| Veniliornis passerinus (Linnaeus, 1766)|              |           | ExM, Rv/sP, Rv/shR, Fol |
| Veniliornis mixtus (Boddaert, 1783) |              |           | ExM, Rv/sP, Rv/shR, Fol |
| Campephilus rubricollis (Boddaert, 1783)|              |           | Rv/sP, Fol, ASI |
| Campephilus melanoleucos (Gmelin, 1788)|              |           | ExM, Rv/sP, Rv/shR, Fol, ASI |
| Campephilus leucopogon (Valenciennes, 1826)|              |           | ExM, Rv/sP, Rv/shR, Fol |
| Dryocopus lineatus (Linnaeus, 1766)  |              |           | ExM, Rv/sP, Rv/shR, Fol, ASI |
| Celeus torquatus (Boddaert, 1783)   |              |           | ExM, Rv/sP |
| Celeus flavus (Status Muller, 1776) |              |           | Rv/sP, Rv/shR, Fol, Fol, ASI |
| Celeus lugubris (Mailheber, 1851)   | *            |           | ExM, Rv/sP, Rv/shR, Fol, ASI |
| Celeus flavescens (Gmelin, 1788)    |              |           | ExM, Rv/sP, Rv/shR |
| Piculus chrysochlorus (Vieillot, 1818)|              |           | ExM, Rv/sP, Rv/shR, Fol, ASI |
| Galaptes melanochloros (Gmelin, 1788)|              |           | ExM, Rv/sP, Rv/shR, Fol, ASI |
| Galaptes campestris (Vieillot, 1818) |              |           | ExM, Rv/sP, Rv/shR, Fol, ASI |
| **Cariamiformes**                   |              |           |          |
| **Cariamidae**                      |              |           |          |
| Cariama cristata (Linnaeus, 1766)   |              |           | ExM, Rv/sP, Rv/shR, Fol, ASI |
| Taxon                                      | Conservation | Migration | Evidence  |
|--------------------------------------------|--------------|-----------|-----------|
| **Falconiformes**                          |              |           |           |
| **Falconidae**                             |              |           |           |
| Herpetotheres cachinnatus (Linnaeus, 1758) | *            | ExM, Rv/sP, Rv/sNP, Fol, ASI |           |
| Micrastur ruficollis (Vieillot, 1817)      | *            | ExM, Rv/sP |           |
| Micrastur semitorquatus (Vieillot, 1817)   | *            | ExM, Rv/sP, Rv/sNP, Fol, ASI |           |
| Caracara plancus (Miller, 1777)            |              | ExM, Rv/sP, Rv/sNP, Fol, ASI |           |
| Milvago chimachmus (Vieillot, 1816)        |              | ExM, Rv/sP, Rv/sNP, Fol, ASI |           |
| Milvago chimango (Vieillot, 1816)          |              | Rv sP, ASI |           |
| Falco sparverius Linnaeus, 1758             |              |           |           |
| Falco rufigularis Daudin, 1800              | *            | ExM, Rv/sP, Rv/sNP, Fol, ASI |           |
| Falco deoleucus Temminck, 1825              | *            | ExM, Rv/sP, Rv/sNP, Fol, ASI |           |
| Falco femoralis Temminck, 1822              |              |           |           |
| Falco peregrinus Taurin, 1771               | INTER        | ExM, Rv/sP, Fol |           |
| **Psittaciformes**                         |              |           |           |
| **Psittacidae**                            |              |           |           |
| Myiopsitta monachus (Boddaert, 1783)        |              | ExM, Rv/sP, Rv/sNP, Fol, ASI |           |
| Brotopogis chori (Vieillot, 1818)          |              | ExM, Rv/sP, Rv/sNP, Fol, ASI |           |
| Pionus maximivii (Kuhl, 1820)              | *            | ExM, Rv/sP, Rv/sNP, Fol, ASI |           |
| Pionus menstruos (Linnaeus, 1766)          |              | ExM, Rv/sP, Rv/sNP, Fol, ASI |           |
| Alipiopsitta xanthops (Spix, 1824)         | * NT (GL), NT (BL) | ExM, Rv/sP, Rv/sNP, Fol, ASI |           |
| Amazona aestiva (Linnaeus, 1758)           | * NT (GL), NT (BL) | ExM, Rv/sP, Rv/sNP, Fol, ASI |           |
| Amazona amazonica (Linnaeus, 1766)         | *            | ExM, Rv/sP, Rv/sNP, Fol, ASI |           |
| Fapus xanthopterygius (Spix, 1824)         | NT (GL), NT (BL) | ExM, Rv/sP, Rv/sNP, Fol, ASI |           |
| Pycnonotus sinuosus (Vieillot, 1817)       |              | ExM, Rv/sP, Rv/sNP, Fol, ASI |           |
| Pycnonotus sinuosus (Vieillot, 1817)       | * NT (BL)    | ExM, Rv/sP, Rv/sNP, Fol, ASI |           |
| Andorinhae haematodus (Latham, 1790)       | * VU (GL), NT (BL) | ExM, Rv/sP, Rv/sNP, Fol, ASI |           |
| Eupetidae aurata (Gmelin, 1788)            |              | ExM, Rv/sP, Rv/sNP, Fol, ASI |           |
| Anisostephanus nenday (Vieillot, 1823)     |              | ExM, Rv/sP, Rv/sNP, Fol, ASI |           |
| Orthopsittaca manilata (Boddaert, 1783)    |              | ExM, Rv/sP, Fol |           |
| Primolius maracau (Vieillot, 1816)         | * NT (GL), NT (BL) | ExM, Rv/sP, Rv/sNP, Fol, ASI |           |
| Primolius auricollis (Cassin, 1853)        | *            | ExM, Rv/sP, Rv/sNP, Fol, ASI |           |
| Ara ararauna (Linnaeus, 1758)              |              | ExM, Rv/sP, Rv/sNP, Fol, ASI |           |
| Ara chloropterus Gray, 1859                | * NT (BL)    | ExM, Rv/sP, Rv/sNP, Fol, ASI |           |
| Tectocerus acutus (Vieillot, 1818)         |              | ExM, Rv/sP, Rv/sNP, Fol, ASI |           |
| Dipsisattus nobilis (Linnaeus, 1758)       |              | ExM, Rv/sP, Rv/sNP, Fol, ASI |           |
| Puttacasus leucomelas (Status Muller, 1776) |              | ExM, Rv/sP, Rv/sNP, Fol, ASI |           |
| **Passeriformes**                          |              |           |           |
| **Thamnophilidae**                         |              |           |           |
| Myrmocherus striolatus (Wied, 1831)        | *            | ExM, Rv/sP, Rv/sNP |           |
| Formicivora greve (Boddaert, 1783)         |              | Rv/sP |           |
| Formicivora melanogaster Pelecanus, 1868   |              | ExM, Rv/sP, Fol, ASI |           |
| Formicivora rufa (Wied, 1831)              | *            | ExM, Rv/sP, Rv/sNP, Fol, ASI |           |
| Dysithamnus mentalis (Temminck, 1823)      |              | ExM, Rv/sP, Rv/sNP, Fol, ASI |           |
| Herpsilochmus longirostris Pelecanus, 1868 |              | ExM, Rv/sP, Rv/sNP, Fol, ASI |           |
| Herpsilochmus atricapillus Pelecanus, 1868 | Rv/sP, Fol | ExM, Rv/sP, Rv/sNP, Fol, ASI |           |
| Thamnophilus dolius (Linnaeus, 1764)       |              | ExM, Rv/sP, Rv/sNP, Fol, ASI |           |
| Thamnophilus sticturus Pelecanus, 1868     |              | ExM, Rv/sP, Rv/sNP, Fol, ASI |           |
| Thamnophilus peregrinus Pelecanus, 1924    |              | ExM, Fol, ASI |           |
| Thamnophilus caerulescens Vieillot, 1816   |              | ExM, Rv/sP, Rv/sNP, ASI |           |
| [Thamnophilus amazonicus Sclater, 1858]    |              | Rv/sP |           |
| Taraba major (Vieillot, 1816)              |              | ExM, Rv/sP, Rv/sNP, Fol, ASI |           |
| Hypocnemoides muculoida (Pelecanus, 1868)  | *            | ExM, Rv/sP, Rv/sNP, Fol, ASI |           |
| Pteroglena maara (Ménétrin, 1835)          |              | ExM, Rv/sP, Rv/sNP, Fol, ASI |           |
| Cercomacra cinnamena (Sclater, 1857)       |              | ExM, Rv/sP |           |
| Cercomacra melanina (Ménétrin, 1835)       | *            | ExM, Rv/sP, Rv/sNP, Fol, ASI |           |
| Drymophila brevirostris (Milne-ga & Hellmayr, 1906) | * | ExM, Rv/sP |           |
| **Conopophagidae**                         |              |           |           |
| Conopophaga lineatae (Wied, 1831)          |              | ExM, Rv/sP, Fol |           |
| **Dendrocolaptidae**                       |              |           |           |
| Sittasomus griseicapillus (Vieillot, 1818) | *            | ExM, Rv/sP, Rv/sNP, Fol, ASI |           |
| Taxon                                                   | Status | Conservation | Migration | Evidence          |
|---------------------------------------------------------|--------|--------------|-----------|-------------------|
| Dendrocincia fuliginosa (Vieillot, 1818)                | *      |              | Rv/sP, Fol |                   |
| [Glyptonyxus sparus (Vieillot, 1819)]                   | *      |              | Rv/sP     |                   |
| Dendrocolaptus picumnus Lichtenstein, 1820              |        | ExM, Rv/sP, Rv/sNP, Fol, ASI |           |                   |
| Dendrocolaptus platyrostris Spix, 1825                  |        | ExM, Rv/sP, Rv/sNP, Fol, ASI |           |                   |
| Xiphocolaptus major (Vieillot, 1818)                    | *      |              | Rv/sP, Fol, ASI |                   |
| Xiphorhynchnus guattatoides (Lafresnaye, 1850)         | *      |              | ExM, Rv/sP, Rv/sNP, Fol, ASI |                   |
| Dendropelax pictus (Gmelin, 1788)                       |        | ExM, Rv/sP, Rv/sNP, Fol, ASI |           |                   |
| Campylorhamphus trochilostris (Lichtenstein, 1820)      |        | ExM, Rv/sP, Rv/sNP, Fol, ASI |           |                   |
| Lepidoctolaptus angustirostris (Vieillot, 1818)         |        | ExM, Rv/sP, Rv/sNP, Fol, ASI |           |                   |
| [Lepidoctolaptus fasciapillus (Pelzeln, 1868)]          |        | ExM, Rv/sP, Rv/sNP, Fol, ASI |           |                   |
| Xenopidae                                               |        | ExM, Rv/sP, Rv/sNP, Fol, ASI |           |                   |
| Xenops rutilans Temminck, 1821                         |        | ExM, Rv/sP, Rv/sNP, Fol, ASI |           |                   |
| Furnariida                                              |        | ExM, Rv/sP, Rv/sNP, Fol, ASI |           |                   |
| Furnarius leucopius Swainson, 1838                      |        | ExM, Rv/sP, Rv/sNP, Fol, ASI |           |                   |
| Furnarius rufus (Gmelin, 1788)                          |        | ExM, Rv/sP, Rv/sNP, Fol, ASI |           |                   |
| Philecoryx melanoops (Vieillot, 1817)                   | *      |              | Fol       |                   |
| Dendroma rufa (Vieillot, 1818)                          | *      |              | Rv/sP, Fol |                   |
| Cibanonmus rectirostris (Wedd, 1831)                   | *      |              | ExM, Rv/sP, Fol, ASI |                   |
| Phacellodomus rufifrons (Wedd, 1821)                   | *      |              | ExM, Rv/sP, Rv/sNP, Fol, ASI |                   |
| Phacellodomus ruber (Vieillot, 1817)                    | *      |              | ExM, Rv/sP, Rv/sNP, Fol, ASI |                   |
| Anumbius annumbi (Vieillot, 1817)                       |        | ExM, Rv/sP, Fol |           |                   |
| Crisoleuca vulpina (Pelzeln, 1856)                     |        | ExM, Rv/sP, Rv/sNP, Fol, ASI |           |                   |
| Crisoleuca pyrrhophia (Vieillot, 1818)                  | *      |              | ExM, Rv/sP, Rv/sNP, Fol, ASI |                   |
| Pseudodendron unicolor (d'Orbigny & Lafresnaye, 1838)  | *      |              | ExM, Rv/sP, Rv/sNP, Fol, ASI |                   |
| Certhias cinnamosomaus (Gmelin, 1788)                   | *      |              | ExM, Rv/sP, Rv/sNP, Fol, ASI |                   |
| Schoenoplectus phryganophilus (Vieillot, 1817)          |        | ExM, Rv/sP, Rv/sNP, Fol, ASI |           |                   |
| Synallaxis scutata Sclater, 1859                       | *      |              | ExM, Rv/sP |                   |
| Synallaxis albifrons Pelzeln, 1856                      |        | ExM, Rv/sP, Rv/sNP, Fol, ASI |           |                   |
| Synallaxis hypopodialis Sclater, 1874                   |        | ExM, Rv/sP, Rv/sNP, Fol, ASI |           |                   |
| Synallaxis alfresco Trimmelck, 1823                     |        | ExM, Rv/sP, Rv/sNP, Fol, ASI |           |                   |
| Synallaxis frontalis Pelzeln, 1859                      |        | ExM, Rv/sP, Rv/sNP, Fol, ASI |           |                   |
| Pipridae                                                |        | ExM, Rv/sP, Rv/sNP, Fol, ASI |           |                   |
| Neopelma pallaens (Lafresnaye, 1853)                    |        | ExM, Rv/sP, Rv/sNP, Fol, ASI |           |                   |
| [Chiroxiphia caudata (Shaw & Nodder, 1793)]             |        | ExM, Rv/sP, Rv/sNP, Fol, ASI |           |                   |
| Anthrophagus galeata (Lichtenstein, 1823)               | *      |              | Rv/sP     |                   |
| [Manacus manacus (Linnæus, 1766)]                       |        | ExM, Rv/sP, Rv/sNP, Fol, ASI |           |                   |
| Pipra fossicauda Hellmayr, 1906                        | *      |              | ExM, Rv/sP, Rv/sNP, Fol, ASI |                   |
| Machaeropus pyrocephalus (Sclater, 1852)                | *      |              | Fol, ASI  |                   |
| Cecilinidae                                             |        | ExM, Rv/sP |           |                   |
| Cephalopterus ornatus Saint-Hilaire, 1809               | *      |              | ExM, Rv/sP |                   |
| Gymnoedera foetida (Linnæus, 1758)                      |        | ExM, Rv/sP, Fol |           |                   |
| Tityridae                                               |        | ExM, Rv/sP, Rv/sNP, Fol, ASI |           |                   |
| Tityra inquisitor (Lichtenstein, 1823)                  |        | ExM, Rv/sP, Rv/sNP, Fol, ASI |           |                   |
| Tityra cynara (Linnæus, 1766)                           | *      |              | INTRA     | ExM, Rv/sP, Rv/sNP, Fol |                   |
| Tityra semilasciia (Spix, 1825)                         |        | ExM, Rv/sP, Fol |           |                   |
| Pachynanthus vanellus (Vieillot, 1816)                  |        | INTRA | ExM, Rv/sP, Rv/sNP, Fol, ASI |                   |
| [Pachynanthus castaneus (Jardine & Selby, 1827)]        |        | Rv/sP | ExM, Rv/sP, Rv/sNP, Fol, ASI |                   |
| Pachynanthus polychropterus (Vieillot, 1818)            | *      |              | INTRA     | Rv/sP, Fol |                   |
| Pachynanthus marginatus (Lichtenstein, 1823)            | *      |              | INTRA     | Rv/sP, Fol |                   |
| Xenopasian albinucha (Burmeister, 1869)                 |        | ExM, Rv/sP, Rv/sNP, Fol, ASI |           |                   |
| Onychorhynchidae                                        |        | Rv/sP |                   |           |
| Myliobius barbus (Gmelin, 1789)                         |        | Rv/sP |                   |           |
| Platyrinchidae                                          |        | Rv/sP |                   |           |
| Platyrinchus mystaceus Vieillot, 1818                   |        | Rv/sP |                   |           |
| Rhynchocyclidae                                         |        | Rv/sP |                   |           |
| Micronectes alegreus (Lichtenstein, 1823)               | *      |              | Rv/sP, Fol |                   |
| Leptopagon amauracanthus Tschudi, 1846                  |        | ExM, Rv/sP, Rv/sNP, ASI |           |                   |
| Corythoporus delalandi (Lesson, 1830)                   |        | ExM, Rv/sP, ASI |           |                   |
| Tolmomyias sulphurensis (Spix, 1825)                    |        | ExM, Rv/sP, Rv/sNP, Fol, ASI |           |                   |

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| Taxon | Status | Conservation | Migration | Evidence |
|-------|--------|--------------|-----------|----------|
| Tolmomyias flaviventris (Wied, 1831) | | | | |
| Todirostrum cinereum (Linnaeus, 1766) | | | | |
| Pooelotriccus latirostris (Pelzeln, 1868) | | | | |
| [Myiornis caudatus (d’Orbigny & Lafresnaye, 1837)]* | | | | |
| Hemtriccus striaticollis (Lafresnaye, 1853) | | | | |
| Hemtriccus mangantaovenventer (d’Orbigny & Lafresnaye, 1837) | | | | |

**Tyranidae**

| Taxon | Status | Conservation | Migration | Evidence |
|-------|--------|--------------|-----------|----------|
| Hirundinae rugosina (Gmelin, 1788) | INTRA | | | |
| Ineza inornata (Salvadori, 1897) | | | | |
| Euscarthmus meloryphus Wied, 1831 | | | | |
| Camptostoma obsolenum (Temminck, 1824) | | | | |
| Elama flavogaster (Thunberg, 1822) | | | | |
| Elama spectabilis Pelzeln, 1868 | | | | |
| Elama chilensis Hellmayr, 1927 | | | | |
| [Elanaia mesoleuca (Deppe, 1839)]* | | | | |
| [Elanaia cristata Pelzeln, 1868]* | | | | |
| Elanaia chiriquensis Lawrence, 1865 | | | | |
| [Elanaia obscura (d’Orbigny & Lafresnaye, 1837)]* | | | | |
| Sueni suini (Vieillot, 1818) | | | | |
| Myiopagis gaimardii (d’Orbigny, 1839) | | | | |
| Myiopagis caniceps (Swainson, 1835) | | | | |
| Myiopagis viridicauda Vieillot, 1817 | | | | |
| Capisemps flavoleuca Lichtenstein, 1823 | | | | |
| Phaeomyias munroii (Spix, 1825) | | | | |
| [Phyllomyias reisi Hellmayr, 1905] * DD (BL) | | | | |
| [Phyllomyias fuscata (Thunberg, 1822)]* | | | | |
| Polyvireta pectoralis (Vieillot, 1817) | | | | |
| Pseudocolopteryx gracilis (Gaston, 1892) | | | | |
| Pseudocolopteryx acutipennis (Sclater & Salvin, 1873) | | | | |
| Pseudocolopteryx flaviventris (d’Orbigny & Lafresnaye, 1837) INTRA | | | | |
| Serophaga nigriceps Vieillot, 1817 | | | | |
| Serophaga subcristata Vieillot, 1817 | | | | |
| Serophaga gieseckii Straneck, 2008 | | | | |
| [Attila phoenicurus Pelzeln, 1868] | | | | |
| [Attila cinereum Gmelin, 1789] | | | | |
| Attila bolivianus Lafresnaye, 1848 | | | | |
| Attila spadiceus Gmelin, 1789 | | | | |
| Legatus fuscipennis Vieillot, 1818 | | | | |
| Myiarchus tuberculifer (d’Orbigny & Lafresnaye, 1837) | | | | |
| Myiarchus swainsoni Cabanis & Heine, 1859 | | | | |
| Myiarchus ferox (Gmelin, 1789) | | | | |
| Myiarchus albogularis Storer, 1815 | | | | |
| Sturnus flaveola Lichtenstein, 1823 | | | | |
| Cacisemps rufla Vieillot, 1816* | | | | |
| Pitangua sulphuratus Linnaeus, 1766 INTRA | | | | |
| Philodryas lictor Lichtenstein, 1823 | | | | |
| Machetornis raus Vieillot, 1819 | | | | |
| Myiodytes maculatus (Status Muller, 1776) | | | | |
| Tymarnopis sulphurea (Spix, 1825) | | | | |
| Megapodius pitangus (Linnaeus, 1766) | | | | |
| Myiozetetes caeruleus (Linnaeus, 1766) | | | | |
| Myiozetetes similis (Spix, 1825) | | | | |
| Tyranus albogularis Burmeister, 1856 | | | | |
| Tyranus melanochilus Vieillot, 1819 | | | | |
| Tyranus savana Daudin, 1802 | | | | |
| Tyranus cyanus (Linnaeus, 1758) | | | | |
| Grisotyrannus aurantioatrocristatus (d’Orbigny & Lafresnaye, 1837) | | | | |
| Empidonax varius (Vieillot, 1818) | | | | |
| Taxon | Status | Conservation | Migration | Evidence |
|-------|--------|--------------|-----------|----------|
| Conopias trivirgatus (Wied, 1831) | DD (BL) | ExM, Rv/sP | FoP | |
| Guaramuemus afflex (Burmeister, 1856) | Rv/sP | ExM, Rv/sP, Rv/sNP, FoP | FoI, ASI | |
| Sublegatus modestus (Wied, 1831) | INTRA | ExM, Rv/sP, Rv/sNP, FoI, ASI | |
| Colonia colonus (Vieillot, 1818) | INTRA | ExM, Rv/sP, Rv/sNP, FoI, ASI | |
| Arundinicola leucocephala (Linnaeus, 1764) | ExM, Rv/sP, Rv/sNP, FoI, ASI | |
| Fluxicola albiventer (Spix, 1825) | INTRA | ExM, Rv/sP, Rv/sNP, FoI, ASI | |
| Fluxicola nengeta (Linnaeus, 1766) | Rv/sP, FoI, ASI | |
| Pyrocephalus rubinus (Boddart, 1783) | INTRA | ExM, Rv/sP, Rv/sNP, FoI, ASI | |
| Gubernetipes yepapo (Vieillot, 1818) | Rv/sP, FoP | |
| Alectrurus tricolor (Vieillot, 1816) | VU (GL), VU (BL) | ExM, Rv/sP, Rv/sNP, FoI, ASI | |
| Alectrurus risora (Vieillot, 1824) | VU (GL) | ExM, Rv/sP, Rv/sNP, FoI, ASI | |
| Myiophobus fasciatus (Status Muller, 1776) | * | ExM, Rv/sP, Rv/sNP, FoI, ASI | |
| Crematrichas fuscatus (Wied, 1831) | * | ExM, Rv/sP, Rv/sNP, FoI, ASI | |
| Lathotrichus euleri (Cabanis, 1868) | INTRA | ExM, Rv/sP, Rv/sNP, FoI, ASI | |
| Empidona alrunor (Brewster, 1895) | INTER | ExM, Rv/sP, FoP, FoI | |
| Contopus cinererus (Spix, 1825) | INTRA | ExM, Rv/sP, Rv/sNP, FoI, ASI | |
| Satrapa iucun (Vieillot, 1818) | ExM, Rv/sP, Rv/sNP, FoI, ASI | |
| Hymenopterus perspicillatus | ExM, Rv/sP, Rv/sNP, FoI, ASI | |
| Alectrurus risora (Vieillot, 1818) | ExM, Rv/sP, Rv/sNP, FoI, ASI | |
| Vireo olivaceus (Linnaeus, 1766) | INTER | ExM, Rv/sP, Rv/sNP, FoI, ASI | |
| Vireo chivi (Vieillot, 1817) | INTRA | ExM, Rv/sP, Rv/sNP, FoI, ASI | |
| Cnemotriccus fuscatus | ExM, Rv/sP, Rv/sNP, FoI, ASI | |
| Lathrotriccus euleri (Cabanis, 1868) | INTRA | ExM, Rv/sP, Rv/sNP, FoI, ASI | |
| Cyanocorax cyanomelas (Vieillot, 1818) | ExM, Rv/sP, Rv/sNP, FoI, ASI | |
| Cyanocorax cristatellus (Temminck, 1823) | Rv/sP, FoI | |
| Cyanocorax chrysops (Vieillot, 1818) | Rv/sP, FoI | |
| Vireonidae | ExM, Rv/sP, Rv/sNP, FoI, ASI | |
| Cyclarhis gujanensis (Gmelin, 1789) | ExM, Rv/sP, Rv/sNP, FoI, ASI | |
| Hylophilus amaurocephalus (Nordmann, 1835) | ExM, Rv/sP | |
| Hylophilus pectoralis (Sclater, 1866) | INTRA | ExM, Rv/sP, Rv/sNP, FoI, ASI | |
| Vireo olivaceus (Linnaeus, 1766) | INTER | ExM, Rv/sP, FoP, FoI | |
| Vireo chivi (Vieillot, 1817) | INTRA | ExM, Rv/sP, Rv/sNP, FoI, ASI | |
| Corvidae | ExM, Rv/sP, Rv/sNP, FoI, ASI | |
| Gynococcyx cyanomelas (Vieillot, 1818) | ExM, Rv/sP, Rv/sNP, FoI, ASI | |
| Gynococcyx cristatus (Temminck, 1823) | ExM, Rv/sP, Rv/sNP, FoI, ASI | |
| Gynococcyx chrysops (Vieillot, 1818) | ExM, Rv/sP, Rv/sNP, FoI, ASI | |
| Hirundinidae | ExM, Rv/sP, Rv/sNP, FoI, ASI | |
| Pygochelidon cyanoleuca (Vieillot, 1817) | INTRA | ExM, Rv/sP, Rv/sNP, FoI, ASI | |
| Alopochelidon fascata (Temminck, 1822) | INTRA | ExM, Rv/sP, Rv/sNP, FoI, ASI | |
| Stelgidopteryx ruficollis (Vieillot, 1817) | INTRA | ExM, Rv/sP, Rv/sNP, FoI, ASI | |
| Progne tapirina (Vieillot, 1766) | INTER | ExM, Rv/sP, Rv/sNP, FoI, ASI | |
| Progne subis (Linnaeus, 1758) | * | ExM, Rv/sP, Rv/sNP, FoI, ASI | |
| Progne chalybea (Gmelin, 1789) | INTRA | ExM, Rv/sP, Rv/sNP, FoI, ASI | |
| Progne elegans Baird, 1865 | INTER | ExM, Rv/sP, Rv/sNP, FoI, ASI | |
| Sachycedrus alboventer (Boddart, 1783) | INTRA | ExM, Rv/sP, Rv/sNP, FoI, ASI | |
| Sachycedrus leucorchoides (Vieillot, 1817) | INTRA | ExM, Rv/sP, Rv/sNP, FoI, ASI | |
| Riparia riparia (Linnaeus, 1758) | * | INTER | ExM, Rv/sP, Rv/sNP, FoI, ASI | |
| Hirundo rustica (Linnaeus, 1758) | * | INTER | ExM, Rv/sP, Rv/sNP, FoI, ASI | |
| Petrochelidon pyrrhonota (Vieillot, 1817) | * | INTER | ExM, Rv/sP, Rv/sNP, FoI, ASI | |
| Tachycineta albiventer | INTRA | ExM, Rv/sP, Rv/sNP, FoI, ASI | |
| Ploieherpetotheres ornata (Vieillot, 1817) | INTRA | ExM, Rv/sP, Rv/sNP, FoI, ASI | |
| Tachycineta albicollis (Temminck, 1822) | INTRA | ExM, Rv/sP, Rv/sNP, FoI, ASI | |
| Tachycineta leucophrys (Vieillot, 1817) | INTRA | ExM, Rv/sP, Rv/sNP, FoI, ASI | |
| Riparia riparia (Linnaeus, 1758) | * | INTER | ExM, Rv/sP, Rv/sNP, FoI, ASI | |
| Hirundo rustica (Linnaeus, 1758) | * | INTER | ExM, Rv/sP, Rv/sNP, FoI, ASI | |
| Petrochelidon pyrrhonota (Vieillot, 1817) | INTRA | ExM, Rv/sP, Rv/sNP, FoI, ASI | |
| Tachycineta albiventer | INTRA | ExM, Rv/sP, Rv/sNP, FoI, ASI | |
| Ploieherpetotheres ornata (Vieillot, 1817) | INTRA | ExM, Rv/sP, Rv/sNP, FoI, ASI | |
| Tachycineta albicollis (Temminck, 1822) | INTRA | ExM, Rv/sP, Rv/sNP, FoI, ASI | |
| Tachycineta leucophrys (Vieillot, 1817) | INTRA | ExM, Rv/sP, Rv/sNP, FoI, ASI | |
| Riparia riparia (Linnaeus, 1758) | * | INTER | ExM, Rv/sP, Rv/sNP, FoI, ASI | |
| Hirundo rustica (Linnaeus, 1758) | * | INTER | ExM, Rv/sP, Rv/sNP, FoI, ASI | |
| Petrochelidon pyrrhonota (Vieillot, 1817) | INTRA | ExM, Rv/sP, Rv/sNP, FoI, ASI | |
| Tachycineta albiventer | INTRA | ExM, Rv/sP, Rv/sNP, FoI, ASI | |
| Ploieherpetotheres ornata (Vieillot, 1817) | INTRA | ExM, Rv/sP, Rv/sNP, FoI, ASI | |
| Tachycineta albicollis (Temminck, 1822) | INTRA | ExM, Rv/sP, Rv/sNP, FoI, ASI | |
| Tachycineta leucophrys (Vieillot, 1817) | INTRA | ExM, Rv/sP, Rv/sNP, FoI, ASI | |
| Riparia riparia (Linnaeus, 1758) | * | INTER | ExM, Rv/sP, Rv/sNP, FoI, ASI | |
| Hirundo rustica (Linnaeus, 1758) | * | INTER | ExM, Rv/sP, Rv/sNP, FoI, ASI | |
| Petrochelidon pyrrhonota (Vieillot, 1817) | INTRA | ExM, Rv/sP, Rv/sNP, FoI, ASI | |
| Taxon                                      | Status | Conservation | Migration       | Evidence |
|-------------------------------------------|--------|--------------|-----------------|----------|
| *Turdus fumigatus* Lichtenstein, 1823      | *      |              | ExM, Rv/sP      |          |
| *Turdus haunwelli* Lawrenc 1869            | *      |              | ExM, Rv/sP, Fol, ASI |          |
| *Turdus rufiventris* Vieillot, 1818        |        |              | ExM, Rv/sP, Rv/sNP, Fol, ASI |          |
| *Turdus amaurochalinus* Cabanis, 1859      | INTRA  |              | ExM, Rv/sP, Rv/sNP, Fol, ASI |          |
| *Turdus subulans* (Sibohm, 1887)          | INTRA  |              | Rv/sP, Fol      |          |
| *Turdus rubricollis* Vieillot, 1818        |        |              | ExM, Rv/sP      |          |
| Mimidae                                    |        |              | ExM, Rv/sP, Rv/sNP, Fol |          |
| *Mimus saturninus* (Lichtenstein, 1823)   |        |              | ExM, Rv/sP, Rv/sNP, Fol |          |
| *Mimus triurus* (Vieillot, 1818)          |        |              | ExM, Rv/sP, Rv/sNP, Fol, ASI |          |
| Turdus rufiventris                        |        |              | ExM, Rv/sP, Rv/sNP, Fol |          |
| Turdus amaurochalinus Cabanis, 1859        | INTRA  |              | ExM, Rv/sP, Rv/sNP, Fol, ASI |          |
| *Turdus subulans* (Sibohm, 1887)          | INTRA  |              | Rv/sP, Fol      |          |
| *Turdus stricklandi* Vieillot, 1818        |        |              | ExM, Rv/sP      |          |
| Estrildidae                                |        |              | ExM, Rv/sP, Rv/sNP, Fol |          |
| *Estrilda astrild* (Linnaeus, 1758)        |        |              | ExM, Rv/sP, Rv/sNP, Fol, ASI |          |
| Passeridae                                 |        |              | ExM, Rv/sP, Rv/sNP, Fol, ASI |          |
| *Passer domesticus* (Linnaeus, 1758)      |        |              | ExM, Rv/sP, Rv/sNP |          |
| Motacillidae                               |        |              | ExM, Rv/sP, Rv/sNP, Fol |          |
| *Anthus chio Vieillot, 1818                |        |              | ExM, Rv/sP, Rv/sNP, Fol, ASI |          |
| Fringillidae                               |        |              | ExM, Rv/sP, Rv/sNP, Fol |          |
| *Spinus magellanicus* (Vieillot, 1805)    |        |              | ExM, Rv/sP, Rv/sNP, Fol |          |
| *Euphonia chlorotica* (Linnaeus, 1818)    |        |              | ExM, Rv/sP, Rv/sNP, Fol, ASI |          |
| *Euphonia violacea* (Linnaeus, 1818)      |        |              | ExM, Rv/sP      |          |
| *Euphonia laniirostris* d’Orbigny & Lafresnaye, 1837 |        |              | ExM, Rv/sP, Rv/sNP, Fol, ASI |          |
| *Passer montanus* (Linnaeus, 1758)        |        |              | ExM, Rv/sP, Rv/sNP, Fol |          |
| *Passer domesticus* (Linnaeus, 1758)      |        |              | ExM, Rv/sP, Rv/sNP, Fol |          |
| *Passer montanus* (Linnaeus, 1758)        |        |              | ExM, Rv/sP, Rv/sNP, Fol |          |
| *Zosterops chiliensis* (Streit, 1776)      |        |              | ExM, Rv/sP, Rv/sNP, Fol |          |
| Icteridae                                  |        |              | ExM, Rv/sP, Rv/sNP, Fol |          |
| *Dolichonyx oryzivorus* (Linnaeus, 1758)  |        |              | ExM, Rv/sP, Rv/sNP, Fol |          |
| *Leistes supercilianus* (Bonaparte, 1850) |        |              | ExM, Rv/sP, Rv/sNP, Fol |          |
| *Pooacauda decumanus* (Pallas, 1769)      |        |              | ExM, Rv/sP, Rv/sNP, Fol, ASI |          |
| *Cariceps solitarius* (Vieillot, 1816)    |        |              | ExM, Rv/sP, Rv/sNP, Fol |          |
| *Cariceps chrysocercus* (Vigors, 1825)    |        |              | ExM, Rv/sP, Rv/sNP, Fol |          |
| *Cariceps colur* (Linnaeus, 1758)         |        |              | ExM, Rv/sP, Rv/sNP, Fol |          |
| *Cariceps haemorrhous* (Linnaeus, 1766)   |        |              | ExM, Rv/sP, Rv/sNP, Fol |          |
| *Carurus coronatus* (Wagler, 1829)        |        |              | ExM, Rv/sP, Rv/sNP, Fol |          |
| *Carurus pyrrhopterus* (Vieillot, 1819)   |        |              | ExM, Rv/sP, Rv/sNP, Fol |          |
| *Melocichla fusca* (Cassin, 1866)         |        |              | ExM, Rv/sP, Rv/sNP, Fol |          |
| *Melocichla aurantiaca* (Gmelin, 1789)    |        |              | ExM, Rv/sP, Rv/sNP, Fol |          |
| *Melocichla baranensis* (Gmelin, 1789)    |        |              | ExM, Rv/sP, Rv/sNP, Fol |          |
| *Amblyramphus victorius* (Scopoli, 1786)  |        |              | ExM, Rv/sP, Rv/sNP, Fol |          |
| *Gnorimopsar copia* (Vieillot, 1819)      |        |              | ExM, Rv/sP, Rv/sNP, Fol |          |
| *Aegialia solida* (Vieillot, 1819)        |        |              | ExM, Rv/sP, Rv/sNP, Fol |          |
| *Alegastocra cyanopis* (Vieillot, 1819)   |        |              | ExM, Rv/sP, Rv/sNP, Fol |          |
| *Chrysolus ruficapillus* (Vieillot, 1819) |        |              | ExM, Rv/sP, Rv/sNP, Fol |          |
| *Chrysococcyx ruficapillus* (Vieillot, 1819) |        |              | ExM, Rv/sP, Rv/sNP, Fol |          |
| *Psaltrippe spinulosa* (Vieillot, 1819)   |        |              | ExM, Rv/sP, Rv/sNP, Fol |          |
| *Parulidae*                                |        |              | ExM, Rv/sP, Rv/sNP, Fol |          |
| *Parula* (Wilson, 1812)                   |        |              | ExM, Rv/sP      |          |
| *Geothlypis auripennis* (Gmelin, 1870)    |        |              | ExM, Rv/sP, Rv/sNP, Fol |          |
| *Setophaga petechia* (Vieillot, 1817)     |        |              | ExM, Rv/sP, Rv/sNP, Fol |          |
| *Myioborus longicaudus* Peck, 1868         |        |              | ExM, Rv/sP      |          |
| *Myioborus ruficollis* (Baird, 1865)      |        |              | ExM, Rv/sP, Rv/sNP, Fol, ASI |          |
| *Basileutus culicivorus* (Deppe, 1830)    |        |              | ExM, Rv/sP, Rv/sNP, Fol |          |
| *Cardinalidae*                            |        |              | ExM, Rv/sP, Rv/sNP, Fol |          |
| *Prionia flava* (Vieillot, 1822)          |        |              | ExM, Rv/sP      |          |
| *Pheucticus aureoventris* (d’Orbigny & Lafresnaye, 1837) |        |              | ExM, Rv/sP, Rv/sNP, Fol |          |
| *Amaurospiza moesta* (Hartlaub, 1853)     |        |              | ExM, Rv/sP, Rv/sNP, Fol |          |
| *Gyranola briscani* (Lichtenstein, 1823)  |        |              | ExM, Rv/sP      |          |
| *Thraupidae*                              |        |              | ExM, Rv/sP, Rv/sNP, Fol, ASI |          |
| *Nemosia pileata* (Boddaert, 1783)        |        |              | ExM, Rv/sP, Rv/sNP, Fol |          |
| *Coryphaspiza melanotis* (Temminck, 1822)  |        |              | Rv/sP           |          |
| *Emberiza platensis* (Gmelin, 1789)       |        |              | Rv/sP           |          |

**Note:** VU (GL), EN (BL) indicates the IUCN Red List categories.
| Taxon                                | Conservation | Migration | Evidence                  |
|--------------------------------------|--------------|-----------|---------------------------|
| Emberizoides herbicola (Vieillot, 1817) | *            |           | ExM, Rv/sP, Rv/sNP, Fol   |
| Emberizoides yyonanganus (Vieillot, 1817) | *            |           | Fol                       |
| Porphyrospiza caeruleus (Wied, 1830) | * NT (GL)    |           | ExM, Rv/sP                |
| Hemithraupis guira (Linnaeus, 1766)  | *            |           | ExM, Rv/sP, Rv/sNP, Fol   |
| Tersina viridis (Illiger, 1811)      | INTRA        |           | ExM, Rv/sP, Rv/sNP, Fol   |
| [Gyanerpes caeruleus (Linnaeus, 1758)]| Rv/sP        |           |                           |
| Gyanerpes cyanus (Linnaeus, 1766)    | Rv/sP, Fol   |           |                           |
| Dacnis cayana (Linnaeus, 1766)       | Rv/sP, ASI   |           |                           |
| Saltatricula atricollis (Vieillot, 1817) |           |           | ExM, Rv/sP, Rv/sNP, Fol   |
| Saltatricula multicolor (Burmeister, 1860) |           |           | Rv/sP, Fol               |
| Saltator maximus (Statius Muller, 1776) | *            |           | ExM, Rv/sP, Rv/sNP, Fol   |
| Saltator coerulescens (Vieillot, 1817) | *            |           | ExM, Rv/sP, Rv/sNP, Fol   |
| Saltator similis (d'Orbigny & Lafresnaye, 1837) | *            |           | ExM, Rv/sP, Rv/sNP, Fol   |
| Saltator aurantirostris (Vieillot, 1817) |           |           | ExM, Rv/sP, Rv/sNP, Fol   |
| Goretha flavoeola (Linnaeus, 1758)   | Rv/sP, ASI   |           |                           |
| Asemospiza obscura (d'Orbigny & Lafresnaye, 1837) | INTRA        |           | ExM, Rv/sP                |
| Asemospiza fuliginosa (Wied, 1830)   | Rv/sP, Fol   |           |                           |
| Volatinia jacarina (Linnaeus, 1766)  | INTRA        |           | ExM, Rv/sP, Rv/sNP, Fol   |
| Eucorax punctillata (Spix, 1825)     | Rv/sP        |           |                           |
| [Trichothraupis melanops (Vieillot, 1818)] |           |           |                           |
| Loriatus luctuosus (d'Orbigny & Lafresnaye, 1837) | *            |           | Fol                       |
| Caryophelis cucullatus (Statius Muller, 1776) |           |           |                           |
| Tochymyias fuscus (Boodarta, 1783)   | Rv/sP, Fol   |           |                           |
| Tochymyias coronatus (Vieillot, 1822) | ExM, Rv/sP   |           |                           |
| Ramphocelus carbo (Pallais, 1764)    | ExM, Rv/sP, Rv/sNP, Fol |           |                           |
| Sporophila lineola (Linnaeus, 1758)  | INTRA        |           | ExM, Rv/sP, Rv/sNP, Fol   |
| Sporophila plumbea (Wied, 1830)      | Rv/sP, Rv/sNP, Fol |           |                           |
| Sporophila callans (Boodarta, 1783)  | ExM, Rv/sP, Rv/sNP, Fol |       |                           |
| Sporophila nigrocollis (Vieillot, 1823) |           |           | ExM, Rv/sP, Rv/sNP, Fol   |
| Sporophila caeruleus (Vieillot, 1817) |           |           | ExM, Rv/sP, Rv/sNP, Fol   |
| Sporophila maxillaris (Boodarta, 1783) |           |           | ExM, Rv/sP, Rv/sNP, Fol   |
| Sporophila nigrocollis (d'Orbigny & Lafresnaye, 1837) | * VU (GL), VU (BL) | INTRA | ExM, Rv/sP, FolP |
| Sporophila bousnellii (Statius Muller, 1776) | *            |           | ExM, Rv/sP, Fol           |
| Sporophila pileata (Sciates, 1865)   | * NT (BL)    |           | ExM, Rv/sP, Rv/sNP, Fol   |
| Sporophila hypoxantha Cabanis, 1851  | VU (BL)      |           | ExM, Rv/sP, Rv/sNP, Fol   |
| Sporophila ruficollis Cabanis, 1851  | * NT (GL), VU (BL) | INTRA | ExM, Rv/sP, Rv/sNP, Fol |
| Sporophila aethereus (Di Giacomo & Kopuchian, 2016) | * EN (GL) | INTRA | Fol |
| Sporophila palustris (Barrows, 1883) | * EN (GL), VU (BL) | INTRA | ExM, Rv/sP, Rv/sNP, Fol |
| Sporophila cinclodes (Stiles, 1915)  | * NT (GL)    |           | ExM, Rv/sP, Rv/sNP, Fol   |
| Sporophila criniceps (Vieillot, 1811) | * VU (GL), NR (BL) | INTRA | ExM, Rv/sP, Rv/sNP, Fol |
| Sporophila angolensis (Linnaeus, 1766) |           |           | ExM, Rv/sP, Rv/sNP, Fol   |
| Sporophila maximilianii (Cabanis, 1851) | * EN (GL), CR (BL) | INTRA | ExM, Rv/sP, Fol |
| Thlypopsis sordida (d'Orbigny & Lafresnaye, 1837) | *            |           | ExM, Rv/sP, Rv/sNP, Fol   |
| Gypsnagra petersi (Lesson, 1831)     | ExM, Rv/sP, Rv/sNP, Fol |           |                           |
| Microspingus melanoleucus (d'Orbigny & Lafresnaye, 1837) | *            |           | ExM, Rv/sP, Rv/sNP, Fol   |
| Microspingus cinereus Bonaparte, 1850 |           |           | ExM                        |
| Conirostrum speciosum (Temminck, 1824) | *            |           | ExM, Rv/sP, Rv/sNP, Fol   |
| Sicalis citrino (Pelzeln, 1870)      | INTRA        |           | ExM, Rv/sP, Rv/sNP, Fol   |
| Sicalis flavescens (Linnaeus, 1758)  | ExM, Rv/sP, Rv/sNP, Fol |           |                           |
| Sicalis surinamen (Stiles, 1879)     | ExM, Rv/sP, Rv/sNP, Fol |           |                           |
| Pipraeidea melanomala (Vieillot, 1819) |           |           | ExM, Rv/sP, Rv/sNP, Fol   |
| Neothraupis fasciata (Lichtenstein, 1823) | * NT (GL) | INTRA | ExM, Rv/sP |
| Cosops lewisi (Gmelin, 1788)         | * NT (GL)    |           | ExM, Rv/sP, Rv/sNP, Fol   |
| Schistochlamys melanopus (Latham, 1790) |           |           | ExM, Rv/sP, Rv/sNP, Fol   |
| [Schistochlamys ruficapillus (Vieillot, 1817)] | *            |           | ExM, Rv/sP, Rv/sNP, Fol   |
| Parnaeanca coronata (Miller, 1816)   | ExM, Rv/sP, Rv/sNP, Fol |           |                           |
| Parnaeanca capitata (d'Orbigny & Lafresnaye, 1837) | *            |           | ExM, Rv/sP, Rv/sNP, Fol   |
| Thraupis sayaca (Linnaeus, 1766)     | ExM, Rv/sP, Rv/sNP, Fol |           |                           |
| Thraupis palmarum (Vieillot, 1817)   | ExM, Rv/sP, Rv/sNP, Fol |           |                           |
| Stygias caerulescens (Linnaeus, 1766) | *            |           | ExM, Rv/sP, Rv/sNP, Fol   |
| Tangara mexicana (Linnaeus, 1766)    | *            |           | Fol                       |

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Table 2. Tertiary list of birds related to the Pantanal, Brazil.

| Taxon                                      | Citation source / Reason for exclusion |
|--------------------------------------------|----------------------------------------|
| Crypturellus soui (Hermann, 1783)          | Donatelli (2005) / A                   |
| Notura bonariae (Spix, 1825)               | Straube et al. (2006a), Benites et al. (2017) / A |
| Spartula cyanoptera (Veilliot, 1816)       | Nunes et al. (2008) / C                |
| Mareca sibilatrix (Poepig, 1829)           | Nunes (2011a) / A                      |
| Penelope obscura Temminck, 1815            | Aguirre & Aldnghj (1983), Souza (2005), Cintra (2014) / C |
| Odontophorus capuena (Spix, 1825)          | Cintra (2014) / D                      |
| Patagioenas plumbea (Veilliot, 1818)       | Leuzinger (2011) / B                   |
| Papa melanogaster (Veilliot, 1817)         | Nunes (2010) / A                       |
| Hydropas chlorocercus (Tschudi, 1844)      | Aguirre & Aldnghj (1983), Cintra (2014) / A |
| Hydropas chlorocercus (Tschudi, 1840)      | Nunes (2011a) / C                      |
| Florosia fusca (Veilliot, 1817)            | Nunes & Tomas (2004b) / C              |
| Anaspia guasun (Boasr, 1891)               | Araujo (2001), Tubelis & Tomas (2003a), Nunes et al. (2009), Cintra (2014) / C |
| Thalurania glauca (Gmelin, 1788)           | Tabelis & Tomas (2003a) / A            |
| Taphroptilus hypostictus (Gould, 1862)     | Sick (1997) / C                        |
| Eleotomia hypostictus (Tschudi, 1845)      | Nunes et al. (2008) / C                |
| Opisthocomus hoazin (Statius Muller, 1776) | Leuzinger (2011) / B                   |
| Tigrisoma fasciatum (Such, 1825)           | Nunes (2010) / B                       |
| Geranoaetus polyosoma (Wied, 1830)         | Nunes et al. (2011a) / C               |
| Anodorhynchus glaucus (Vieilliot, 1816)    | Cintra (2014) / D                      |
| Myrmotherula axillaris (Vieilliot, 1817)   | Cintra (2014) / D                      |
| Myrmotherula menetriesii (d’Orbigny, 1847) | Nunes et al. (2011a) / C               |
| Myrmotherula menetriesii (d’Orbigny, 1837) | Cintra (2014) / D                      |
| Thamnophilus punctatus Swainson, 1825      | Cintra (2014) / D                      |
| Pyrgotypus leucopterus (Vieilliot, 1818)   | Cintra (2014) / D                      |
| Myiopagis flavivertex (Sclater, 1887)      | Schubart et al. (1965), Cintra (2014) / A |
| Ramphocinclis ruficauda (Spix, 1825)       | Leuzinger (2011) / A                   |
| Neopipo cinnamomea (Lawrence, 1869)        | Nunes et al. (2010), Cintra (2014) / C  |
| Procnias coelebs (Linnaeus,1766)           | Nunes et al. (2010), Cintra (2014) / D  |
| Myiopagis flavivertex (Sclater, 1887)      | Leuzinger (2011) / A                   |
| Bubulcus ibis (Linnaeus, 1758)             | Schubart et al. (1965), Cintra (2014) / A |
| Myiopagis flavivertex (Sclater, 1887)      | Leuzinger (2011) / A                   |
| Neopipo cinnamomea (Lawrence, 1869)        | Nunes et al. (2010), Cintra (2014) / D  |
| Procnias coelebs (Linnaeus,1766)           | Nunes et al. (2010), Cintra (2014) / D  |
| Myiopagis flavivertex (Sclater, 1887)      | Leuzinger (2011) / A                   |
| Bubulcus ibis (Linnaeus, 1758)             | Nunes et al. (2010), Cintra (2014) / D  |
| Neopipo cinnamomea (Lawrence, 1869)        | Nunes et al. (2010), Cintra (2014) / D  |
| Procnias coelebs (Linnaeus,1766)           | Nunes et al. (2010), Cintra (2014) / D  |
| Myiopagis flavivertex (Sclater, 1887)      | Leuzinger (2011) / A                   |
| Bubulcus ibis (Linnaeus, 1758)             | Nunes et al. (2010), Cintra (2014) / D  |
| Neopipo cinnamomea (Lawrence, 1869)        | Nunes et al. (2010), Cintra (2014) / D  |
History, for the maintenance of a meaningful avifaunistic richness. The avifauna of this region can be considered quite rich compared to that found in other wetlands of the world, such as the Okavango Delta in Botswana with more than 450 species (Hancock et al., 2007) and the “Esteros del Iberá” in Argentina with 344 species (Giraudo et al., 2003). In Brazil, 373 species are listed in the Upper Paraná River floodplain (Paraná and Mato Grosso do Sul) alone (Gimenez et al., 2007), with an additional, 230 species (Pereira & Poerschke, 2010) listed in Lagoa do Peixe (Rio Grande do Sul).

The increasing advent of “Citizen Science” practices have made it possible to make an expressive contribution to everything that was previously known about the Pantanal avifauna, especially with the advent of digital platforms such as WikiAves and Xeno-Canto that have been fundamental in expanding knowledge and supporting documentation. However, it is emphasized that there are some limitations to the inadvertent use of this data, such as reliability in identification and inaccuracy of location, which need to be checked directly with the authors of the records. Despite notable advances in the knowledge of the composition of the Pantanal avifauna, there are great geographical gaps, notably in the regions of Cáceres, Piauí, and Chaco (Fig. 1), as evidenced in the studies by Frota et al. (2020b) and Fernandez-Arellano et al. (2021), who identified a series of locations with poorly sampling effort for the bird inventory.

### Biogeographic affinities

The avifauna occurring in the Pantanal floodplain is composed mostly of species that are widely distributed in other South American phyogeographic provinces as well, such as the Cerrado and Chaco regions and, to a lesser extent, in the Amazon, Bosques Secos Chiquitanos, and Atlantic forests (Nunes & Tomas, 2004a). The similarities between the bird communities of the Pantanal region and the Cerrado region are to be expected as one-third of the Pantanal region is covered by the savanna phytophysiognomies (Ratter et al., 2003). Species with a wide distribution in the Cerrado region (Silva, 1995; Silva & Bates, 2002) such as Penelope ochrogaster, Uropelia campestris, Alipiopsitta xanthops, Saltatricula atricollis, and Basileuterus culcivorus are also widespread in the floodplain. The Chaco province enters a few kilometers in to Brazil, notably around the municipality of Porto Murtinho, in the southern part of the Pantanal region (Prado 1993a, b; Prado & Gibbs, 1993; Straube et al., 2006a), and the only species that can be considered endemic to this region is Saltatora multicolor. However, there are some taxa, whose distribution is largely centered in the Upper Paraguay River Basin, notably in the lowland and western edge of the Pantanal, and which, in a way, can be considered typical of the Chaco region: Ortalis canicollis, Aratinga nenday, Nyctalus straitipectus, Melanerpes cactorum, Celeus lugubris, Xiphocolaptes major, Paroaria coronata, and Micropsingus melanoleucus.

Most of the typical species of the Amazon Basin (Silva, 1996) have the northern portion of the floodplain (Santo Antônio do Leverger and the Cáceres region), which serves as the southern most limit of its distribution. In this context, Tinarus tao, Pauxi tuberosa, Helicolestes ha-matus, Megacophs usto, Trogon melanurus, Pteroglossus inscriptus, Pteroglossus bitorquatus, Campephilus rubricol lis, and Thamnophilus amazonicus are the outstanding species in this region. Other species, however, extend their southern limits to the western edge in the Serra do Amolar region (Nunes et al., 2018) such as Pseudastur albicollis, Coccycua minuta, Veniliornis affinis, and Dendroplex picus. The Bosques Secos Chiquitanos dry forests extend tangentially to the far west of Mato Grosso and Mato Grosso do Sul (Prado & Gibbs, 1993; Timothy et al., 2006; Werneck et al., 2011). At least four species occurring in the Pantanal floodplain have distributions centered on these Chiquitanos dry woods (Vasconcelos & Hoffmann, 2006, Nunes et al., 2018): Phaethornis subochraceus, Pyrrhura molinae, Thamnophilus sticturus, and Cantorchilus guarayanus.

### Migration movement

Of the migratory species occurring in Brazil (Somenzari et al., 2018), at least a third use the Pantanal floodplain as a stopover or wintering site during migratory movements across the American continent to a greater or lesser extent. Waterfowl migratory displacements represent a significant portion of inter- and intracontinental migrants, which is expected for seasonally flooded environments (Oliveira, 2006; Nunes & Tomas, 2008; Donatelli et al., 2017). In this context, some anatids (Coscoroba coscoroba, Callonetta leucophrys, Anas baha-mensis, Spatula platelia, Netta peposaca, and Oxyura vit-tata) stand out, which reproduce mainly in Rio Grande do Sul, southern Bolivia, and northwestern Argentina regions, then move to the floodplain of the Pantanal during the winter and spend the dry periods in southern South America (Nunes & Tomas, 2008). With regard
to migrants dependent on aquatic habitats, sandpipers (genera *Tringa* and *Calidris*) stand out for their long-distance displacement from breeding areas in the tundra to wintering sites in Patagonia (Nunes & Tomas, 2008), therefore being the Pantanal mudflats habitats a very important stopover for Scolopacidae family (Serrano, 2010; Frota et al., 2020c). The occurrence of Nearctic migratory species, such as *Numenius hudsonicus*, *Arenaria interpres*, *Calidris alba*, *C. pusilla*, *C. minutilla*, *C. bairdii*, *Xema sabini*, *Leucophaeus pipixcan*, and *Chlidonias niger*, can be considered accidental since the Pantanal floodplain not usual route for these species (Serrano, 2010; Kantek & Onuma, 2013; Frota et al., 2020a).

Antas et al. (2016) reported that young *Rynchops niger* birds banded in the SESC Pantanal in Barão de Melgaço (MT) were recaptured in the Mar Chiquita lagoon near Mar del Plata in Argentina, and in Lagoa do Peixe (Rio Grande do Sul). After the reproductive period, which coincides with the end of the rainy season, the population of *Phaeactus auroventris* disperses from the Andes pre-mountain range to the Pantanal floodplain and surrounding plateaus from May to August (Nunes, 2008).

There is a great flow of migratory birds coming from the southernmost regions of South America, notably the seedeaters (*Sporophila*), to central and northern Brazil. Some species (*S. hypoxantha*, *S. caerulescens*, *S. iberaensis*, *S. palustris*, and *S. ruficollis*) reproduce in the hydromorphic fields in the southern regions of South America and appear in large numbers in the native fields of the Pantanal during the winter (Nunes & Tomas, 2008).

Migratory birds, notably northern ones, are among the main players involved in ecological processes of nutrient cycling and dispersion of important pathogens between the two continents (Kawamoto et al., 2005; Nunes & Tomas, 2008; Araújo et al., 2014).

### Endangered species

According to the Handbook of the Birds of the World & BirdLife International (2020), 231 species occurring in the Pantanal region are experiencing population declines. However, most of them comprise common species with viable and vigorous populations in the floodplains, a fact that highlights the Pantanal region as an important biological refuge for birds in South America (Nunes, 2009). Of these, *Rhea americana* and *Crax fasciolata* are considered “Near Threatened” and “Vulnerable”, respectively, at a global scale. Hasenclever et al. (2004) estimated 6,500 *R. americana* individuals across the Pantanal floodplain, whereas the estimated population ranged from 1 to 2 individuals per km² in western Nhecolândia (Grábin et al., 2012). In turn, the density estimates of *C. fasciolata* in western Nhecolândia varied according to habitat, between 3 and 5 individuals per hectare in open and forested areas, respectively (Nunes, 2015).

In addition to deforestation and replacement of natural landscapes by cultivated pastures (Tomas et al., 2009), extreme drought and fires (Marengo et al., 2021; Pivello et al., 2021) that have occurred in recent years have seriously threatened regional richness and diversity (Berlink et al., 2021). The fires that occurred in the Pantanal region in 2020 destroyed 29% of the native vegetation; more than 4% of the burned area corresponded to conservation sites (Libonati et al., 2020). Four million hectares of forest, cerrado, and savanna were burned, with the northern portion of the floodplain being the most affected by the fires (Libonati et al., 2020). It is noteworthy that the region affected by the fires coincides with the refuges of large populations of two of the most threatened species occurring in the Pantanal floodplain: the Chestnut-bellied Guan (*Penelope ochrogaster*) and the Hyacinth Macaw (*Anodorhynchus hyacinthinus*). In addition, many migratory species, notably those dependent on native grasslands habitats such as most seedeaters (Nunes & Tomas, 2008), were also affected by the loss of feeding sites due to these fires. Based on the type of habitat they explore and nesting sites, it is speculated that more than half of the bird species that occur in the Pantanal may have had their populations affected to a higher or lower extent by the fires. However, the effects of these events on populations of endangered, migrant, and even common species in the Pantanal are still unknown. Considering the future scenario of climate change, the traditional and sustainable management of the Pantanal, sustainable fire management, and maintenance of the mosaic and spatial arrangement of the landscape units intact and continuous is essential to maintain the diversity in this unique and fragile ecosystem.

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### AUTHORS’ CONTRIBUTIONS

APN, SRP, AVBF, BDV, RRL, RJD, FCS, MACP: Conceptualization, Methodology, Data curation, Writing – original draft, Investigation, Writing – review & editing. DMMO, CB, AVM, WMT, GOF, RADS, MB, SM, RSM: Investigation.
CONFLICT OF INTEREST

Authors declare there are no conflicts of interest and the authors alone are responsible for the content and writing of the paper.

REFERENCES

Aguirre, A.C. & Aldrighi, A.D. 1983. Catálogo das aves do Museu da Fauna: primeira parte. Rio de Janeiro, IBDF. 143p.
Allen, J.A. 1891. On a collection of birds from Chapada, Mato Grosso, Brazil, made by Mr. Herbert H. Smith. Part I – Oxises. Bulletin of the American Museum of Natural History, 3: 337-380.
Allen, J.A. 1892. On a collection of birds from Chapada, Mato Grosso, Brazil, made by Mr. Herbert H. Smith. Part II – Tyrannidae. Bulletin of the American Museum of Natural History, 4: 331-350.
Allen, J.A. 1893. On a collection of birds from Chapada, Mato Grosso, Brazil, made by Mr. Herbert H. Smith. Part III – Pipridae to Rheidae. Bulletin of the American Museum of Natural History, 5: 107-158.
Alvares, C.A.; Stape, J.L.; Sentelhas, P.C.; Moraes, G., Leonardo, J. & Sparovek, G. 2014. Köppen’s climate classification map for Brazil. Meteorologische Zeitschrift, 22(6): 711-728. DOI
Amaral, P.P. & Ragusa-Netto, J. 2008. Bird mixed-flocks and nuclear species in a tecoma savanna in the Pantanal. Brazilian Journal of Biology, 68(3): 511-518.
Antas, P.T.Z. 1983. Migration of nearctic shorebirds (Charadriidae and Scopoliaceidae) in Brazil – flyways and their different seasonal use. Water Study Group Bulletin, 39(1): 52-56.
Antas, P.T.Z. 1994. Migration and other movements among the lower Paraná River valley wetlands, Argentina, and the south Brazil/Pantanal wetlands. Bird Conservation International, 4(2): 181-190.
Antas, P.T.Z. & Nascimento, I.L.S. 1996. Tuiuiú: sob os céus do Pantanal, biologia e conservação do Tuiuiú. São Paulo, Empresa das Artes. 169p.
Antas, P.T.Z. & Palo-Jr., H. 2004. Guia de aves: espécies do reservar particular do patrimônio natural do SESC Pantanal. 1ª Edição. Rio de Janeiro, SESC Nacional. 246p.
Antas, P.T.Z. & Palo-Jr., H. 2009. Guia de aves: espécies da reservar particular do patrimônio natural do SESC Pantanal. 2. ed. Rio de Janeiro, SESC Nacional.
Antas, P.T.Z.; Carrara, L.A.; Ubaid, F.K.; Oliveira-Júnior, S.B. & Ferreira, L.P. 2016. Aves coloniais da Reserva Particular do SESC Pantanal. Conhecendo o Pantanal 10. Rio de Janeiro, SESC, Departamento Nacional. 236p.
Antas, P.T.Z.; Yamashita, C. & Valle, M.P. 1986. First record of purple Martin for Brazil. Brazilian Journal of Biology, 2(4): 181-190.
Argot, N.J.; Gonzaga, L.P.; Krabbe, N.; Madròño-Nieto, A.; Naranjo, L.G.; Parker III, T.A. & Wege, D. 1992. Threatened birds of Americas: the ICBP/IUCN red data book. Cambridge, International Council for Bird Preservation. 1150p.
Benites, M.; Mamede, S.; Carvalho, G. & Alho-Jr., C. 2017. Assessment of avian occurrence in the Brazilian chaco. International Journal of Avian & Wildlife Biology, 2(4): 99-113.
Berlink, C.N.; Lima, L.H.A.; Pereira, A.M.M.; Carvalho Jr., E.A.R.; Paula, R.C.; Tomas, W.M. & Morato, R.G. 2021. The Pantanal is on fire and only a sustainable agenda can save the largest wetland in the world. Brazilian Journal of Biology, 82: 1-2. DOI
Brandão, L.C.; Antas, P.T.Z.; Oliveira, L.F.B.; Pádua, M.T.J.; Pereira, N.C. & Valutky, W.W. 2011. Plano de Manejo da Reserva Particular de Patrimônio Natural do SESC Pantanal. Rio de Janeiro, SESC Departamento Nacional. 146p.
Brazil. 2020. Cadastro Nacional de Unidades de Conservação (Painel Unidades de Conservação Brasileiras). Available: http://antigo.mma.gov.br/areas-protégidas/cadastro-nacional-deu-deu-cs. Access: 22/03/2020.
Brown-Jr., K.S. 1986. Zoogeografia da região do Pantanal Mato-grossense. In: Simpósio sobre Recursos Naturais e Sócio-Econômicos do Pantanal, 1ª. Anais. Brasília, DF, EMBRAPA-DDT. p. 137-182.
Carlos, C.J.; Straube, F.C. & Pacheco, J.F. 2010. Conceitos e definições sobre documentação de registros ornitológicos e critérios para a elaboração de listas de aves para os estados brasileiros. Revista Brasileira de Ornitologia, 18(4): 355-361.
Cestari, C. 2006a. Primeiro registro documentado de Alecturis tricolor para o Pantanal. Revista Brasileira de Ornitologia, 14(2): 155-156.
Cestari, C. 2006b. Novos registros de aves do gênero Sporophila para o Pantanal. Atualidades Ornitológicas, 129: 7.
Chiaravalloti, R.M.; Tomas, W.M.; Tizianel, F.A.T. & Camilo, A.R. 2009. Aves, Accipitrídeas, Harpyhaliaeetus coronatus: a documented record in the Pantanal wetland. Check List, 5(1): 89-91.
Cintra, R. 2014. Aves do Pantanal: 523 espécies incluindo cerca de 350 da Amazônia e 450 do Cerrado. Manaus, Editora INPA. 376p.
Cintra, R. & Yamashita, C. 1990. Hábitats, abundancia e ocurrencia das aves do Pantanal de Poconé, Mato Grosso, Brazil. Papéis Avulsos Zoolgia, 37(1): 1-21.
Collar, N.J.; Gonzaga, L.P.; Krabbe, N.; Madróño-Nieto, A.; Naranjo, L.G.; Parker III, T.A. & Wege, D. 1992. Threatened birds of Americas: the ICBP/IUCN red data book. Cambridge, International Council for Bird Preservation. 1150p.
Donatelli, R. 2005. Birds and dynamics habitat mosaics in the Pantanal. In: Chandee, M.; Wang, E. & Johansson, P. (Eds.). The Pantanal conservation research initiative. Annual report. Boston, Earthwatch Institute. p. 50-69.
Donatelli, R.J. & Ubaid, F.K. 2008. Primeiro registro documentado de Celes flavus no Estado de Mato Grosso do Sul. Coleta, 30: 85-86.
Donatelli, R.J.; Posso, S.R. & Toledo, M.C.B. 2014. Distribution, composition and seasonality of aquatic birds in the Nhecolândia sub-region of South Pantanal, Brazil. Brazilian Journal Biology, 74(4): 844-853.
Emanuel, V. 2013. A bird in two hemispheres. Available: https://evntbirdblog.wordpress.com/2013/10. Access: 22/03/2021.
Evangelista, M.M.; Pinho, J.B. & Chupel, T.F. 2010. Descrição do ninho e dos ovos de Zebrasinus undulatus (Gmelin, 1789) (Ciconiiformes: Ardeidae) na região do Pantanal de Poconé, Mato Grosso, Brasil. Revista Brasileira de Ornitolgia, 18(2): 121-123.

Fernandez-Arellano, G.J.; Teixido, A.L.; Bernardon, B.; Bueno, E.R.; Ferreira, T.V.; Gonçalves, S.A.; Jesus, M.; Thomas, K.P.C.S.; Zucchetto, M.; Piacentini, V. & Pinho, J.B. 2021. Knowledge gaps and biases in the Pantanal indicate future directions for ornithological research in large wetlands. Ibis, 163. DOI

Frotta, A.V.B.; Vitorino, B.D.; da Silva, C.J.; Ikeda-Castrillon, S.K. & Nunes, J.R.S. 2020a. Birds of the Ramsar site Estação Ecológica de Taimabú and buffer zone, Pantanal wetlands, Brazil. Check List, 16(2): 401-422. DOI

Frotta, A.V.B.; Vitorino, B.D.; Nunes, J.R.S.; da Silva, C.J. 2020b. Main trends and gaps in studies for bird conservation in the Pantanal wetland. Neotropical Biology and Conservation, 15(4): 427-445. DOI

Frotta, A.V.B.; Vitorino, B.D.; da Silva, C.J.; Ikeda-Castrillon, S.K. & Nunes, J.R.S. 2020c. Bird community structure in macrohabitats of the aquatic-terrestrial transition zone in the Pantanal wetland, Brazil. Oecologia Australis, 24(3): 615-634. DOI

Gimenes, M.R.; Lopes, E.V.; Loures-Ribeiro, A.; Mendonça, L.B. & Anjos, L. 2007. Aves da planície alagável do alto rio Paraná. Maringá, Editora da Universidade Estadual de Maringá. 281p.

Giraudo, A.R.; Chatellenaz, M.L.; Saibene, C.A.; Ordano, M.A.; Krauczuk, E.R.; Alonso, J. & Di Giacomo, A.S. 2003. Avifauna do Iberá: composición y datos sobre su historia natural. In: Alvarez, B.B. (Ed.). Fauna del Iberá. Buenos Aires, Editorial de la Universidad Nacional del Nordeste, Talleres Gráficos Volpe/Fox. p. 195-207.

Grábín, D.M.; Tomas, M.A. & Tomas, W.M. 2012. Densidade de Rhea americana em três paisagens diferentes do Pantanal de Nhecolândia, MS, Brasil. Oecologia Australis, 16(4): 905-913.

Guedes, N.M.R. 1993. Biologia reprodutiva da arara-azul (Anodorhynchus hyacinthinus) no Pantanal – MS, Brasil. Piracicaba, Escola Superior de Agronomia “Luiz de Queiroz” – ESAU/Universidade de São Paulo, Programa de Pós-Graduação em Ciências Florestais. Dissertação de Mestrado. 122 pp.

Guedes, N.M.R. & Harper, L.H. 1995. The Hyaclin Macaw in the Pantanal. In: Abramson, J.; Speer, B.L. & Thomsen, J.B. (Eds.). The large macaws: their care, breeding and conservation. Fort Bragg, RainTree Press. p. 394-401.

Gwynne, J.A.; Ridgely, R.S.; Tudor, G. & Argel, M. 2010. Aves do Brasil: Pantanal e Cerrado. São Paulo, Editora Horizonte. 322p.

Hamilton, S.K.; Sippel, A.L. & Melack, J.M. 1996. Inundation patterns in the Pantanal Brazil, 19(3): 3-29.

Hancock, P.; Muller, M. & Tyler, S.J. 2007. Inventory of birds of the Okavango Delta Ramsar Site. Babbler, 49: 3-29.

Handbook of the birds of the world & BirdLife International. 2020. Handbook of the birds of the world and BirdLife International digital checklist of the birds of the world. Version 5. Available: http://datazone.birdlife.org/userfiles/Species/Taxonomy/HBW-BirdLife.Checklist.v5_Dec20.zip. Access: 02/01/2021.

Harris, M.B.; Tomas, W.M.; Mourão, G.; Silva, G.J.; Guimarães, E.; Sonoda, F. & Facchini, E. 2005. Challenges to safeguard the Pantanal wetlands, Brazil: threats and conservation initiatives. Conservation Biology, 19(3): 714-720.

Hasendeuer, L.; Reiman, C.; Mourão, G.M. & Campos, Z.M.S. 2004. Densidades, tamanho de grupo e reprodução de emas no Pantanal Sul. Boletim de Pesquisa & Desenvolvimento, EMBRAPA-CAP 55: 1-17.

Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis (IBAMA). 2007. Biodiversidade do Cerrado e Pantanal: áreas e ações prioritárias para conservação. Série Biodiversidade 17. Brasília, Ministério do Meio Ambiente. 540p. Available: http://www.mma.gov.br/estruturas/chm_arquivos/cerrado_pantanal.pdf. Access: 09/01/2021.

Instituto Chico Mendes de Conservação da Biodiversidade (ICMBio). 2014. Espécies Ameaçadas – Lista 2014. Available: http://www.icmbio.gov.br/portal/biodiversidade/fauna-brasileira/lista-de-espécies.html. Access: 28/09/2020.

Junk, F. & Lima, S.F. 2003. Plano de Manejo do Parque Nacional do Pantanal. Brasília, DF, Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis/The Nature Conservancy, 543p.

Junk, W.J.; Cunha, C.N.; Wantzen, K.M.; Petermann, P.; Strüssmann, C.; Macues, M.I. & Adis, J. 2006. Biodiversity and its conservation in the Pantanal of Mato Grosso, Brazil. Aquatic Science, 68: 1-32.

Junk, W.J.; Pielade, M.T.F.; Lou rallying, R.; Wittman, F.; Kandus, P.; Lacerda, L.D.; Bozelli, R.L.; Esteves, F.A.; Nunes da Cunha, C.; Maltchik, L.; Schöngart, J.; Schaeffer-Novelli, Y. & Agostinho, A.A. 2014. Brazilian wetlands: their definition, and classification for research, sustainable management, and protection. Aquatic Conservation: Marine And Freshwater Ecosystems, 24: 5-22.

Kantek, D.L.Z. & Onuma, S.S.M. 2013. Primeiro registro documentado da Gaivota-de-franklin Leucophaeus pipixcan Wagler, 1831 para o bioma Pantanal, Brasil. Ornithologia, 6(1): 106-108.

Kawamoto, A.H.N.; Mancini, D.A.P.; Pereira, L.E.; Ganciarullolo, A.M.; Cruz, A.S.; Dias, A.L.F.; Mendonça, R.M.Z.; Pinto, J.R. & Durigon, E.L. 2005. Investigation of influenza in migration birds, the primordial reservoir and transmitters of influenza in Brazil. Brazilian Journal of Microbiology, 36: 88-93.

Lago-Paiva, C. & Willis, E.O. 1994. New occurrences of Melanerpes cactorum D’Orbigny, 1840 (Aves, Picidae) in Brazil.Zytoplasma, 7(1-2): 110-115.

LASA-UFRJ – Laboratório de Aplicações de Satélites Ambientais da Universidade Federal do Rio de Janeiro. 2021. Área queimada – Pantanal 2020. Available: https://lasa.ufrj.br/alarmes. Access: 02/08/2021.

Leuzinger, L. 2011. Taxeús – Listas de espécies – Fazenda Barranco Alto. Available: http://www.taxeu.com.br/lista/192. Access: 09/05/2013.

Libonati, R.; DaCamara, C.C.; Peres, L.F.; Carvalho, S. & Garcia, L.C. 2020. Rescue Brazil’s burning Pantanal wetlands. Nature, 588: 217-219.

Lopes, L.E.; Pinho, J.B.; Ortiz, A.; Evangelista, M.M.; Silveira, L.F; Schunck, F. & Develey, P.F. 2016. Birds from Cáceres, Mato Grosso: the highest species richness ever recorded in a Brazilian non-forest region. Revista Brasileira de Ornitolgia, 24(2): 137-167.

Marengo, J.A.; Cunha, A.P.; Cuartas, L.A.; Leal, K.R.D.; Broedel, E.; Seluchi, M.E.; Michelin, C.M.; Baiano, C.F.P.; Ángulo, E.C.; Almeida, E.K.; Kazmierzczak, M.L.; Mataes, N.P.A.; Silva, R.C. & Bender, F. 2021. Extreme drought in the Brazilian Pantanal in 2019-2010: characterization, causes, and impacts. Frontiers in Water, 3. DOI

Melo, A.V. & Teribelli, R. 2008. Registro documentado de água-chilena Buteo (Geranaeetus) melanoleucus para o Mato Grosso do Sul. Atualidades Ornitológicas, 144: 10.

Melo, A.V.; Santos, E.; Nunes, A.P. & Tomas, W.M. 2007. Registro documentado do gavião-asá-de-telha (Pardubeto unicolor) para o Mato Grosso do Sul. Atualidades Ornitológicas, 135: 14.

Mestre, L.A.M. 2007. Registros das migrações de trinta-réis-boreal Sterna hirundinina: análise das recuperações de indivíduos marcados na América do Norte (1928-2005) e Brasil (1983-2005). Ornithologia, 2(2): 81-87.

Mestre, L.A.M.; Roos, A.L. & Nunes, M.F. 2010. Análise das recuperações no Brasil de aves anilhas no exterior entre 1927 e 2006. Ornithologia, 4(1): 15-35.

Miranda, C.S.; Paranhos-Filho, A.C. & Pott, A. 2017. Changes in vegetation cover of the Pantanal wetland detect by Vegetation Index: a strategy for conservation. Biota Neotropica, 18(1). DOI
Travassos, L. & Freitas, J.F.T. 1940. Relatório da excursão científica realizada na zona da Estrada de Ferro Noroeste do Brasil em julho de 1939, Memórias do Instituto Oswaldo Cruz, 35(3): 525-556.

Travassos, L. & Freitas, J.F.T. 1942. Relatório da sexta excursão do Instituto Oswaldo Cruz, realizada à zona da Estrada de Ferro Noroeste do Brasil, em Novembro de 1941. Memórias do Instituto Oswaldo Cruz, 37(3): 259-286.

Travassos, L.; Travassos, H.; Rego-Barros, A.R.; Albuquerque, D.O.; Oliveira, S.J.; Castro, A.L. & Lopes, H.S. 1957. Excursão científica realizada nas zonas das Estradas de Ferro Noroeste do Brasil e Brasil-Bolívia em janeiro e fevereiro de 1955. Publicação Avulsas Museu Nacional do Rio Janeiro, 20(1): 1-19.

Tubelis, D.P. & Tomas, W.M. 1999. Distribution of birds in a naturally patchy forest environment in the Pantanal wetland, Brazil. Ararajuba, 7(2): 81-89.

Tubelis, D.P. & Tomas, W.M. 2003a. Bird species of the Pantanal wetland, Brazil. Ararajuba, 11(1): 5-37.

Tubelis, D.P. & Tomas, W.M. 2003b. The contributions of museum collection and of records not involving collections to the knowledge bird species composition of the Pantanal, Brazil. Ararajuba, 11(2): 207-214.

Ubaid, F.K. & Antas, P.T.Z. 2013. Novos registros de aves para a Reserva Particular do Patrimônio Natural SESC Pantanal, Barão de Melgaço, MT. Ornitolgia, 5(2): 122-130.

Ubaid, F.K. & Donatelli, R.J. 2008. Primeiro registro documentado da garça-da-mata (Agamia agami, Ardeidae) para o Estado do Mato Grosso do Sul, Brasil. Atualidades Ornitológicas, 142: 44-45.

Ubaid, F.K.; Ferreira, L.P.; Oliveira-Júnior, S.B. & Antas, P.T.Z. 2010. Primeiro registro de Harpia harpyja para o bioma Pantanal, com dados sobre atividade reprodutiva. Revista Brasileira de Ornitolgia, 19(1): 88-92.

Vasconcelos, M.F. & Hoffmann, D. 2006. Os Bosques Secos Chiquitanos também são nossos! Atualidades Ornitológicas, 130: 10-11.

Vasconcelos, M.F.; Lopes, L.E.; Hoffmann, D.; Silveira, L.F. & Schunck, F. 2008. Noteworthy records of birds from the Pantanal, Chiquitano dry forest and Cerrado of south-western Brazil. Bulletin British Ornithologist Club, 128(1): 57-67.

VertNet — National Science Foundation: where discoveries begin. 2021. Distributed databases with backbone. Available: http://portal.vertnet.org/search. Access: 15/03/2021.

Visual Resources for Ornithology (VIREO). 2021. Birds fotos and images of birds worldwide. The Academy of Natural Sciences of Drexel University. Available: http://vireo.ansp.org. Access: 22/03/2021.

Vitorino, O.B.; Frota, A.V.B.; Angelo, M. & Nunes, J.R.S. 2017. A fauna associada a duas áreas de nascentes no Assentamento Laranjeira I, Província Serrana, Cáceres, MT. In: Castrillón, S.L.; Puhl, J.J.; Morais, F.F. & Lopes, A.A.E.T.M. (Orgs.). Escassez hídrica e restauração ecológica no Pantanal: recuperação nas menores e fragmentos de mata ciliar do cênone no Assentamento Laranjeira I e mobilização para conservação dos recursos hídricos no Pantanal mato-grossense. Cuiabá, Carlini & Caniato Editorial. p. 153-167.

Weinberg, L.F. 1984. Aves do Pantanal do Mato Grosso do Sul. Boletim FBCN, Rio de Janeiro, 19(1): 81-88.

Werneck, F.F.; Costa, G.C.; Colli, G.R.; Prado, D.E. & Sites-Jr., J.W. 2011. Revisiting the historical distribution of Seasonally Dry Tropical Forests: new insights based on palaeodistribution modelling and palynological evidence. Global Ecology and Biogeography, 20: 272-288.

Whittaker, A.; Zimmer, K.J. & Carlos, B. 2008. The status of Mississippi Kite (Ictinia mississippiensis) in Brazil, including further documented records for the country. Cotinga, 29: 139-143.

WikiAves — A Enciclopédia das Aves do Brasil. 2021. Available: http://www.wikiaves.com. Access: 06/03/2021.

Willis, E.O. 1995. Black versus white waterbird colonies (Aves) in the Bolivian-Brazilian Pantanal. Iheringia, Série Zoologia, 78(1): 95-97.

Willis, E.O. & Oniki, Y. 1990. Revanamento preliminar das aves de inverno em dez áreas do sudoeste de Mato Grosso, Brasil. Ararajuba, 1(1): 19-38.

Xeno-Canto Foundation — Sharing bird sounds from around the world. 2021. Available: http://www.xeno-canto.org. Access: 09/03/2021.

Yabe, R.S.; Marques, E.J. & Marini, M.A. 2010. Movements of birds among natural vegetation patches in the Pantanal, Brazil. Bird Conservation International, 20: 400-409.

Yamashita, C. 1997. Anodorhynchus macaws as followers of extinct megafauna: an hypothesis. Ararajuba, 5(2): 176-182.

Yamashita, C. & Valle, M.P. 1990. Sobre ninhais de aves do Pantanal do Município de Poconé, Mato Grosso, Brasil. Vida Silvestre Neotropical, 2(2): 59-63.

Zimmer, J.T. 1933. Studies of Peruvian birds. X. The Formicarian genus Thanophillus. Part 2. American Museum Novitates, 647: 1-27.
## SUPPLEMENTARY MATERIAL

Sites and regions with records of birds species in the Pantanal wetland, followed by their geographic coordinates and their sources of information.

| Localities                        | Coordinates       | Reference                                                                 |
|-----------------------------------|-------------------|---------------------------------------------------------------------------|
| Albuquerque                       | 19°24'S, 57°24'0'E | Tubelis & Tomas (2003a), Vasconcelos et al. (2008)                       |
| APA Baia Negra                    | 19°01'S, 57°31'0'E | This study (GOF & RADS, 2018 and 2019)                                    |
| Aquidauana                        | 20°29'S, 55°48'0'E | Tubelis & Tomas (2003a), Whittaker et al. (2008)                          |
| Área próxima ao Rio Vermelho      | 19°16'S, 56°51'0'E | Tubelis & Tomas (2003a)                                                  |
| Área urbana de Porto Murtinho     | 21°41'S, 57°52'0'E | Benites et al. (2017)                                                    |
| Assentamento Laranjeiras          | 16°34'S, 57°32'0'E | Vitorino et al. (2017), this study (BOV & AVBF, 2016)                     |
| Baia do Malheiros                 | 16°03'S, 57°41'0'E | Nunes et al. (2010), this study (AVBF & BOV, January 2019 and January 2020) |
| Baia do Retiro Velho              | 16°10'S, 57°46'0'E | Nunes (2010)                                                              |
| Baia Boca do Natalino             | 16°30'S, 57°47'0'E | Nunes (2010)                                                              |
| Baia da Guáva                     | 16°39'S, 57°10'0'E | Tubelis & Tomas (2003a)                                                  |
| Baia do Momo                      | 16°42'S, 57°46'0'E | Nunes (2010)                                                              |
| Baia Negra                        | 16°48'S, 57°39'0'E | Kantek & Onuma (2015)                                                    |
| Baia Simão Nunes                  | 16°19'S, 57°44'0'E | Nunes (2010)                                                              |
| Base de Estudos do Pantanal       | 19°34'S, 57°01'0'E | This study (SRP & RRL, 2011 and 2020)                                     |
| Base do IBAMA, Transpantaneira    | 17°12'S, 57°00'0'E | Tubelis & Tomas (2003a)                                                  |
| Boca de Homiguera                 | 19°03'S, 57°19'0'E | Tubelis & Tomas (2003a)                                                  |
| Cáceres                           | 16°08'S, 57°43'0'E | Tubelis & Tomas (2003a), Lopes et al. (2016), WikiAves (2021)             |
| Caçara                            | 16°04'S, 57°45'0'E | Tubelis & Tomas (2003a), Lopes et al. (2016)                              |
| Fazenda do Retiro Velho           | 16°10'S, 57°46'0'E | Nunes et al. (2010)                                                       |
| Fazenda Cascalhos                 | 21°39'S, 57°43'0'E | This study (December 2013 and February 2014)                             |
| Campus da UFMS/Corumbá             | 18°59'S, 57°37'0'E | Nunes et al. (2011)                                                       |
| Carandazal/MS-325                 | 19°43'S, 57°04'0'E | This study (November 2011)                                                |
| Carandazinho                      | 18°19'S, 57°12'0'E | Tubelis & Tomas (2003a)                                                  |
| Centro de Pesquisa da Vida Selvagem do Pantanal | 16°07'S, 56°59'0'E | WikiAves (2021)                                                            |
| Chácara Acordia                   | 21°42'S, 57°51'0'E | Benites & Mamede (2021), this study (MB & SM, 2020)                      |
| Chácara Brasília                  | 21°42'S, 57°50'0'E | Benites & Mamede (2021), this study (MB & SM, 2020)                      |
| Corumbá                           | 18°39'S, 57°38'0'E | Tubelis & Tomas (2003a), Mestre (2007), Nunes et al. (2008), Mestre et al. (2010), this study (APN, 2004 to 2013) |
| Curva do Leque                    | 19°15'S, 57°03'0'E | Nunes et al. (2010), Serrano (2010), WikiAves (2021)                      |
| Descalvados/Pelegos               | 16°41'S, 57°45'0'E | Tubelis & Tomas (2003a), Lopes et al. (2016)                              |
| Military base of Porto Murtinho   | 21°05'S, 57°50'0'E | This study (APN, November 2011)                                           |
| Dique de contenção de inundação e área rural de Porto Murtinho | 21°41'S, 57°52'0'E | Benites et al. (2017), Benites & Mamede (2021)                           |
| Estação Barranco Branco           | 21°05'S, 57°50'0'E | This study (APN, November 2011)                                           |
| Estação Ecológica de Taimã         | 16°52'S, 57°28'0'E | Lopes et al. (2016), Frota et al. (2020a)                                 |
| Estação Ingeaíra                  | 22°00'S, 57°56'0'E | Benites et al. (2017), Benites & Mamede (2021)                            |
| Fazenda Acucariz                   | 17°49'S, 57°32'0'E | Allen (1891), Benites & Mamede (2021), this study (FCS, June 2003; SRP & RRL, September 2014) |
| Fazenda Aripuaná                  | 20°06'S, 55°57'0'E | Tubelis & Tomas (2003a), WikiAves (2021), Xeno-Canto (2021)               |
| Fazenda Alegria                   | 19°03'S, 56°47'0'E | Tubelis & Tomas (2003a), Nunes et al. (2009), Nunes (2015)                 |
| Fazenda Alvorada                   | 17°16'S, 56°15'0'E | This study (WMT, 2007)                                                    |
| Fazenda Baia, Pixaim               | 16°40'S, 56°48'0'E | Tubelis & Tomas (2003a)                                                  |
| Fazenda Baia Bonita                | 18°40'S, 56°26'0'E | Tubelis & Tomas (2003a)                                                  |
| Fazenda Baia das Pedras            | 19°15'S, 55°46'0'E | This study (RDI, November 2007)                                           |
| Fazenda Baia de Pedra              | 16°28'S, 58°08'0'E | Lopes et al. (2016)                                                       |
| Fazenda Baia Grande                | 20°20'S, 56°15'0'E | WikiAves (2021)                                                            |
| Fazenda Barra Mansa                | 19°35'S, 56°05'0'E | Tubelis & Tomas (2003a)                                                  |
| Fazenda Barranco Alto/Salina       | 19°35'S, 56°09'0'E | Tubelis & Tomas (2003a), Leuzinger (2011)                                 |
| Fazenda Barranco Branco            | 21°05'S, 57°50'0'E | This study (APN, November 2011)                                           |
| Fazenda Bela Vista                 | 19°14'S, 57°26'0'E | Nunes et al. (2008, 2010)                                                 |
| Fazenda Braunal                    | 22°06'S, 57°44'0'E | Straube et al. (2006a), this study (APN, November 2011)                   |
| Fazenda Caçaim                     | 19°56'S, 56°20'0'E | Tubelis & Tomas (2003a), Nunes et al. (2011a), Straube & Meto (2011), WikiAves (2021), Xeno-Canto (2021) |
| Fazenda Cântel                     | 18°43'S, 55°15'0'E | Nunes et al. (2008), this study (APN, May 2005)                           |
| Fazenda Campo Lourdes              | 19°32'S, 55°38'0'E | This study (IPO, July 2007)                                               |
| Fazenda Campo Novo                 | 19°22'S, 57°37'0'E | Nunes et al. (2008)                                                       |
| Fazenda Cerro Porã                  | 22°01'S, 57°31'0'E | Benites et al. (2017)                                                    |
| Localities | Coordinates | Reference |
|------------|-------------|-----------|
| Pousada das Araras | 16°30'5, 56°42'0 |
| Fazenda Fazenda | 19°29'5, 56°29'0 |
| Fazenda Figueirinha | 19°15'5, 57°40'0 |
| Fazenda Firmezinho | 19°15'5, 57°40'0 |
| Fazenda Jofre | 17°17'5, 56°50'0 |
| Fazenda Lucero Porã | 21°54'5, 57°38'0 |
| Fazenda Mojeio | 19°19'5, 57°34'0 |
| Fazenda Novos Dourados/RPPN Engenheiro Eliezer Batista | 18°05'5, 57°28'0 |
| Fazenda Nhuminirim | 18°59'5, 56°39'0 |
| Fazenda Nova Esperança | 17°54'5, 56°47'0 |
| Fazenda Icara | 20°38'5, 57°27'0 |
| Fazenda Palmeiras/Palmr | 18°55'5, 57°06'0 |
| Fazenda Porto Concesção | 20°28'5, 57°55'0 |
| Fazenda Parapatanga | 15°56'5, 57°48'0 |
| Fazenda Pirapatanga | 16°28'5, 56°08'0 |
| Fazenda Pouso Alégre | 16°30'5, 56°44'0 |
| Fazenda Quebracho/Porto Quebracho | 21°50'5, 57°33'0 |
| Fazenda Rabicho | 18°59'5, 57°37'0 |
| Fazenda Rancharia | 18°34'5, 55°50'0 |
| Fazenda Retrinho | 19°59'5, 56°02'0 |
| Fazenda Rio Alegre | 17°08'5, 56°33'0 |
| Fazenda Rio Cari | 16°37'5, 56°44'0 |
| Fazenda Rio Negro | 19°30'5, 56°17'0 |
| Fazenda San Francisco | 20°05'5, 56°36'0 |
| Fazenda Santa Cruz | 17°04'5, 56°54'0 |
| Fazenda Santa Emilia | 19°30'5, 55°33'0 |
| Fazenda Santa Inês | 16°30'5, 56°45'0 |
| Fazenda Santa Isabel | 17°10'5, 57°01'0 |
| Fazenda Santa Lúcia | 21°02'5, 57°44'0 |
| Fazenda Santa Teresa/Pixaim | 16°45'5, 56°52'0 |
| Fazenda Santa Virginia | 22°01'5, 57°54'0 |
| Fazenda Santana | 19°37'5, 55°36'0 |
| Fazenda Santana do Paiaguás | 18°03'5, 56°31'0 |
| Fazenda Santo Antônio das Lendas | 16°39'5, 57°50'0 |
| Fazenda Santo Expedido | 19°06'5, 56°43'0 |
| Fazenda São Bento | 19°29'5, 56°59'0 |
| Fazenda São Francisco | 16°54'5, 56°15'0 |
| Fazenda São Francisco do Paiaguás | 17°46'5, 55°37'0 |
| Fazenda São Francisco do Tereré | 21°19'5, 57°50'0 |
| Fazenda São João | 16°56'5, 56°37'0 |
| Fazenda São José do Piquiri | 17°14'5, 56°34'0 |
| Fazenda São Luiz | 18°09'5, 57°01'0 |
| Fazenda São Pedro | 16°22'5, 56°22'0 |
| Fazenda São Roque | 19°10'5, 56°42'0 |
| Fazenda Tabaco | 22°04'5, 55°38'0 |
| Fazenda Tamarã | 19°05'5, 57°06'0 |
| Fazenda Tamarã do Naboré | 20°17'5, 57°38'0 |
| Fazenda Tereré | 21°25'5, 57°48'0 |
| Fazenda Tereza Preta | 20°24'5, 57°21'0 |
| Firme | 21°12'5, 57°26'0 |
| Forte Coobra | 21°55'5, 57°47'0 |
| Fez do Rio Ape | 22°05'5, 57°59'0 |
| Fez do Rio Jaru/Rácoré | 16°20'5, 57°46'0 |
| Hotel Porto Jofre | 17°21'5, 56°46'0 |
| Ilha do Naboré | 20°22'5, 57°44'0 |
| Ilha dos Bugres/Passo do Bugre | 19°47'5, 57°39'0 |
| Joselândia | 16°32'5, 56°09'0 |
| Lagoa de Chacororé | 16°02'5, 57°43'0 |
| Margem do Rio Paraguai | 21°42'5, 57°54'0 |
| Localities                        | Coordinates           | Reference                                                                 |
|----------------------------------|-----------------------|---------------------------------------------------------------------------|
| Miranda                          | 20°14'S, 56°22'O      | Tubelis & Tomas (2003a)                                                   |
| Moquém                           | 16°23'S, 56°16'O      | Vasconcelos et al. (2008)                                                 |
| Morro/Ilha do Puga                | 19°37'S, 57°30'O      | Tubelis & Tomas (2003a)                                                   |
| Morro Pico de Açuícer             | 21°26'S, 57°53'O      | Tubelis & Tomas (2003a), this study (APIN & WMT, November 2011)           |
| Paiaquás                         | 18°11'S, 55°33'O      | This study (WMT, 2007)                                                    |
| Pantanal do Abobral               | 19°22'S, 57°03'O      | Tubelis & Tomas (2003a)                                                   |
| Paratunlal                       | 19°35'S, 57°02'O      | Amaral & Ragusa-Netto (2008)                                             |
| Parque de exposições, Poconé      | 16°19'S, 56°12'O      | Tubelis & Tomas (2003a)                                                   |
| Parque Estadual Encontro das Águas| 17°05'S, 56°41'O      | WikiAves (2021)                                                           |
| PARNA Pantanal Matasgrosense      | 17°51'S, 57°25'O      | Jesus & Silva (2003), WikiAves (2021)                                     |
| Passo do Lontra                   | 19°14'S, 57°02'O      | Tubelis & Tomas (2003a), Nunes et al. (2010), Xeno-Canto (2021), WikiAves (2021) |
| Pinazal                           | 16°14'S, 56°23'O      | Pinho (2005), Signor & Pinho (2010), Evangelista et al. (2010)            |
| Poconé                           | 16°15'S, 56°57'O      | Tubelis & Tomas (2003a), this study (IRSM, 2012)                           |
| Ponte do Rio Nabileque            | 20°21'S, 57°38'O      | Straube et al. (2006b)                                                    |
| Ponte do Rio Naitaca              | 20°37'S, 57°34'O      | This study (APIN, November 2011)                                          |
| Porto Gonçal                      | 17°08'S, 57°21'O      | Lopes et al. (2016)                                                       |
| Porto Gercado                     | 16°30'S, 56°22'O      | Tubelis & Tomas (2003a)                                                   |
| Porto da Fazenda                  | 16°27'S, 57°07'O      | Tubelis & Tomas (2003a)                                                   |
| Porto da Mangue                   | 19°15'S, 57°14'O      | Sick (1997), Nunes et al. (2010), WikiAves (2021)                          |
| Porto de Corumbá                  | 18°59'S, 57°39'O      | WikiAves (2021)                                                           |
| Porto do Alegre                   | 17°37'S, 56°57'O      | This study (WMT, 2007)                                                    |
| Porto Esperança                   | 19°36'S, 57°28'O      | Naumburg et al. (1930), Tubelis & Tomas (2003a), WikiAves (2021)          |
| Porto Faia                        | 18°22'S, 57°21'O      | Naumburg et al. (1930)                                                    |
| Porto Jofre/Santa Rosa            | 17°21'S, 56°46'O      | Tubelis & Tomas (2003a)                                                   |
| Porto Murtinho                    | 21°41'S, 57°52'O      | Tubelis & Tomas (2003a), Straube et al. (2006a)                           |
| Porto do IBAMA, Transpantaneira   | 16°21'S, 56°38'O      | Tubelis & Tomas (2003a)                                                   |
| Poucada Pantaneiro                | 16°56'S, 56°53'O      | Xeno-Canto (2021)                                                         |
| Poucada Pequi                     | 20°11'S, 55°55'O      | WikiAves (2021)                                                           |
| Poucada Pinual                    | 16°23'S, 56°35'O      | Emanuel (2013), Xeno-Canto (2021), this study (DMMO & BC, 2010 to 2019)   |
| Poucada Refúgio da Ilha           | 20°13'S, 56°14'O      | Ribas et al. (2011), WikiAves (2021)                                      |
| Poucada Rio Mutum                 | 16°20'S, 55°51'O      | WikiAves (2021)                                                           |
| Poucada Xaraés                    | 19°29'S, 56°57'O      | Nunes et al. (2010)                                                       |
| Reserva Kadêwú                    | 20°19'S, 57°29'O      | Straube et al. (2006a), this study (APIN, November 2011)                   |
| Retiro Carandá                    | 21°47'S, 57°34'O      | WikiAves (2021)                                                           |
| Retiro Novo                       | 16°22'S, 56°18'O      | Vasconcelos et al. (2008), Naibo et al. (2018)                            |
| Riacho Sanga Funda                | 22°04'S, 57°34'O      | Straube et al. (2006a)                                                    |
| Rio Nabileque                     | 20°44'S, 57°43'O      | Straube et al. (2006b)                                                    |
| Rio Paraguai-Mirim                | 19°00'S, 57°25'O      | Tubelis & Tomas (2003a)                                                   |
| Rio Piquire                       | 17°56'S, 56°12'O      | This study (WMT, 2007)                                                    |
| Rio São Lourenço/Cuisabá          | 17°29'S, 56°52'O      | Tubelis & Tomas (2003a)                                                   |
| Rio Farumá                        | 21°32'S, 57°49'O      | Straube et al. (2006a)                                                    |
| rios Miranda/Abobral              | 19°34'S, 57°01'O      | Tubelis & Tomas (2003a), Nunes et al. (2010)                              |
| rios Vermelho/Miranda             | 19°36'S, 56°56'O      | Tubelis & Tomas (2003a)                                                   |
| Rodovia BR-257/MS                 | 21°41'S, 57°51'O      | Benites et al. (2017)                                                     |
| Rodovia MS-195                    | 20°04'S, 57°32'O      | This study (WMT, November 2011)                                           |
| Rodovia MS-325                    | 20°01'S, 57°20'O      | This study (WMT, November 2011)                                           |
| Rodovia Ramon Gomes (marginal stretch to Canal do Tamengo) | 19°00'S, 57°40'O | WikiAves (2021)                                      |
| RPPN SESC                        | 16°39'S, 56°16'O      | Tubelis & Tomas (2003a), Brandão et al. (2011), Ubaid & Antas (2013), Ubaid et al. (2010), WikiAves (2021) |
| Salobra                          | 20°11'S, 56°30'O      | Tubelis & Tomas (2003a)                                                   |
| Santo Antônio (antiga usina)      | 15°52'S, 56°04'O      | Tubelis & Tomas (2003a)                                                   |
| Santo Antônio do Leverger         | 15°59'S, 56°07'O      | Xeno-Canto (2021), WikiAves (2021)                                        |
| Sudeste da Nhecolândia            | 19°18'S, 56°06'O      | Tubelis & Tomas (2003a)                                                   |
| Transpantaneira                   | 16°24'S, 56°40'O      | Tubelis & Tomas (2003a)                                                   |
| Transpantaneira (10 km South of Poconé) | 16°16'S, 56°59'O  | Xeno-Canto (2021)                                                        |
| Transpantaneira (stretch between Rio Bento Gomes and Pixaim) | 16°15'S, 56°44'O | Tubelis & Tomas (2003a)                                                   |
| Tucum                            | 16°30'S, 57°48'O      | Lopes et al. (2016)                                                       |
| Vazante do Capivari               | 18°14'S, 56°12'O      | Serrano (2010)                                                            |

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Sites and records (regions without precision of sampled site) of birds species in the Pantanal wetland, followed by their sources of information.

| Localities                                      | Reference                                      |
|-------------------------------------------------|------------------------------------------------|
| Flood area of the Rio Bento Gomes               | WikiAves (2021)                                |
| Barra do Rio Paraguai/São Lourenço               | WikiAves (2021)                                |
| Barão de Melgaço                                 | WikiAves (2021)                                |
| BR-262 (between Miranda and Corumba)            | WikiAves (2021)                                |
| Cáceres                                         | WikiAves (2021)                                |
| Corumbá                                         | Vasconcelos & Hoffmann (2006), WikiAves (2021) |
| Coxim                                           | WikiAves (2021)                                |
| Cuiabá                                          | WikiAves (2021)                                |
| Estrada Parque Pantanal Sul                     | WikiAves (2021)                                |
| Estrada Parque Pantanal Sul (between Curva do Leque and Porto da Manga) | WikiAves (2021) |
| Fazenda Miranda                                 | VertNet (2021)                                 |
| Fazenda Nova Esperança                          | WikiAves (2021)                                |
| Foz do Rio Negro                                | Nascimento et al. (2000)                       |
| Miranda                                         | WikiAves (2021)                                |
| Nhecolândia                                     | Tubels & Tomás (2003a), Serrano (2010)         |
| Nordeste do Pantanal                            | Tubels & Tomás (2003a)                         |
| Pantanal                                        | Cintra (2014)                                  |
| Pantanal da Nhecolândia                         | WikiAves (2021)                                |
| Pantanal do Abobral                             | WikiAves (2021)                                |
| Poconé                                         | WikiAves (2021)                                |
| Porto Murtinho                                  | WikiAves (2021)                                |
| Região do Rio Negro                             | Tubels & Tomás (2003a)                         |
| Rio São Lourenço e Cuiabá                       | Tubels & Tomás (2003a)                         |
| Rio Taquari                                     | Tubels & Tomás (2003a)                         |
| Rio Verde de Mato Grosso                        | WikiAves (2021)                                |
| Rodovia Transpantaneira                         | WikiAves (2021)                                |
| Rodovia Transpantaneira (between Poconé and Porto Jofre) | Tubels & Tomás (2003a)   |
| Salinas do Rio Negro                            | Serrano (2010)                                 |
| Santo Antônio do Leverger                       | WikiAves (2021)                                |