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ARTICLE

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

Alessandro Pacheco Nunes[1]; Sérgio Roberto Posso[2]; Angélica Vilas Boas da Frota[3,17]; Breno Dias Vitorino[3,18]; Rudi Ricardo Laps[4]; Reginaldo José Donatelli[5]; Fernando Costa Straube[6]; Maria Antonietta Castro Pivatto[7]; Dalci Maurício Miranda de Oliveira[8]; Braulio Carlos[9]; Alyson Vieira de Melo[10]; Walfrido Moraes Tomas[11]; Gabriel Oliveira de Freitas[12]; Rafael Augusto Ducel de Souza[13]; Maristela Benites[14,15,19]; Simone Mamede[15,20] & Renato Soares Moreira[16]

[1] Bioma Meio Ambiente – Consultoria Ambiental. Corumbá, MS, Brasil.
ORCID: http://orcid.org/0000-0003-0031-9938. E-mail: tiriba.ms@gmail.com (corresponding author)
[2] Universidade Federal de Mato Grosso do Sul (UFMS), Laboratório de Ecologia, Sistemática e Conservação das Aves Neotropicais (LESCAN). Três Lagoas, MS, Brasil. ORCID: http://orcid.org/0000-0002-7823-9068. E-mail: srposso@hotmail.com
[3] Universidade do Estado de Mato Grosso (UNEMAT), Centro de Limnologia, Biodiversidade e Etnobiologia do Pantanal (CELBE), Programa de Pós-Graduação em Ciências Ambientais (PPGCA). Cáceres, MT, Brasil.
[4] Universidade Federal de Mato Grosso do Sul (UFMS), Centro de Ciências Biológicas e da Saúde (CCBS), Programa de Pós-Graduação em Ecologia e Conservação. Campo Grande, MS, Brasil. ORCID: http://orcid.org/0000-0002-2668-9171. E-mail: rudilaps@uol.com.br
[5] Universidade Estadual Paulista "Júlio de Mesquita Filho" (UNESP), Faculdade de Ciências, Departamento de Ciências Biológicas, Laboratório de Ornitologia. Bauru, SP, Brasil. ORCID: http://orcid.org/0000-0002-5988-2226. E-mail: reginaldo.donatelli@unesp.br
[6] HORI Consultoria Ambiental. Curitiba, PR, Brasil. ORCID: http://orcid.org/0000-0002-1881-5000. E-mail: fernando@hori.bio.br
[7] A Loja dos Passarinhos, Consultoria em Turismo de Observação de Aves. São Paulo, SP, Brasil.
ORCID: http://orcid.org/0000-0003-2499-3062. E-mail: tietta.pivatto@gmail.com
[8] Universidade Federal de Mato Grosso (UFMT), Instituto de Biociências (IB), Departamento de Biologia e Zoologia. Cuiabá, MT, Brasil.
ORCID: http://orcid.org/0000-0002-8905-2274. E-mail: acquavis@gmail.com
[9] Birding & Wildlife Safaris. Cuiabá, MS, Brasil. ORCID: http://orcid.org/0000-0002-1717-9938. E-mail: brauliocarlos@gmail.com
[10] Universidade Federal Rural de Pernambuco (UFRPE), Programa de Pós Graduação em Biodiversidade e Conservação (PGBC).
Serra Talhada, PE, Brasil. ORCID: http://orcid.org/0000-0003-1659-7801. E-mail: alysonmelo@hotmail.com
[11] Empresa Brasileira de Pesquisa Agropecuária – Pantanal (EMBRAPA Pantanal), Laboratório de Vida Selvagem. Corumbá, MS, Brasil.
ORCID: http://orcid.org/0000-0001-9395-7415. E-mail: walfrido.tomas@embrapa.br
[12] Fundação do Meio Ambiente do Pantanal, Educação Ambiental. Cuiabá, MS, Brasil.
ORCID: http://orcid.org/0000-0002-4270-903X. E-mail: gabrielrj.freitas@gmail.com
[13] Icterus Ecoturismo e Expedições, Condutor de Observação de Aves. Corumbá, MS, Brasil. ORCID: http://orcid.org/0000-0003-2100-9621.
E-mail: rafaelducel@outlook.com
[14] Universidade Federal de Mato Grosso do Sul (UFMS), Centro de Ciências Biológicas e da Saúde (CCBS),
Programa de Pós-Graduação em Ensino de Ciências. Campo Grande, MS, Brasil.
[15] Instituto Mamede de Pesquisa Ambiental e Ecoturismo. Campo Grande, MS, Brasil.
[16] Organização de Desenvolvimento Sustentável (ODS). Patos de Minas, MG, Brasil.
ORCID: http://orcid.org/0000-0003-0700-8446. E-mail: renatomoreiraods@gmail.com
[17] ORCID: http://orcid.org/0000-0003-3693-4756. E-mail: angelicafrotaa@gmail.com
[18] ORCID: http://orcid.org/0000-0002-5293-8581. E-mail: brenovitorino@gmail.com
[19] ORCID: http://orcid.org/0000-0003-0024-1122. E-mail: maris.benites@gmail.com
[20] ORCID: http://orcid.org/0000-0002-7785-320X. E-mail: institutomamede2@gmail.com

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

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ISNI: 0000-0004-0384-1825

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.

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 the Pantanal floodplain (Tubelis & Tomas, 2003b). Their observations and collections resulted in relevant publications on the species found in the region (Travassos, 1940, 1941; Travassos & Freitas, 1942; Pinto, 1948; Ruschi, 1955; Travassos *et al.,* 1957; Sick, 1961). In 1970, specimen collections were made by the Museum of Fauna (formerly 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 Renewal 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) points 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 km^2 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 phytophysiognomies 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 natures (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 km^2 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 & Ubaid (2008); Melo & Teribeli (2008); Nunes *et al.* (2008); Pivatto *et al.* (2008); Ubaid & Donatelli (2008); Vasconcelos *et al.* (2008); Wittaker *et al.* (2008); Antas & Palo-Jr. (2009); Chiaravalloti *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); Ubaid *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); Ubaid & 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); Vitorino *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/sNP), 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).

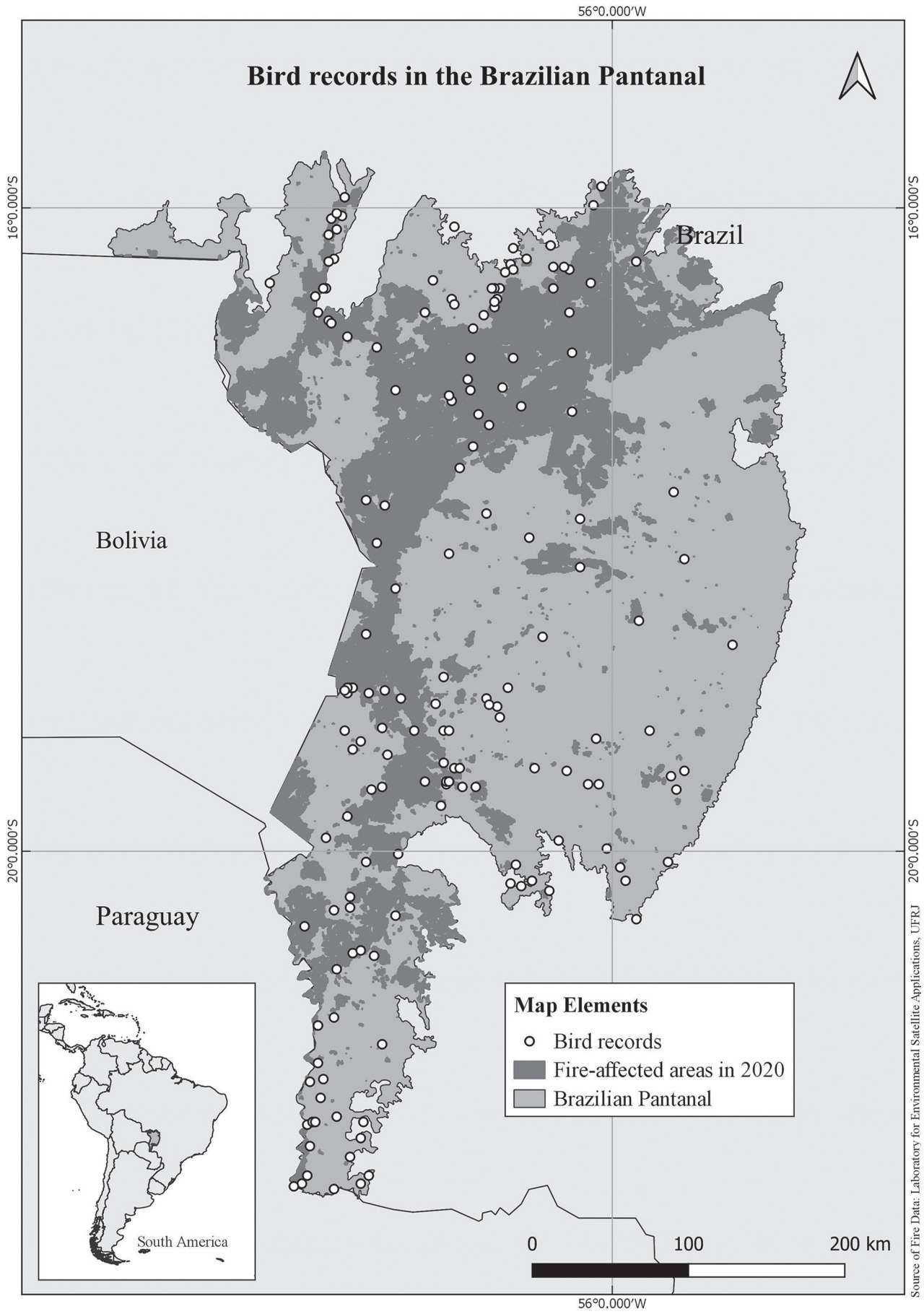

Figure 1. Localities with ornithological inventories in Pantanal wetland. The circles correspond to different sample sites, whose geographic coordinates can be found in Table S1. The dark gray spots correspond to burned areas in 2020 fire gray spots correspond to burned areas in 2020 fire according to 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.ansp.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 Threatment", 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 addrd 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), FoI (photo published on the internet), FoAP (photo in particular collection); ASI (sound file available on the internet).

Taxon	Status		Evidence
	Conservation	Migration	
Rheiformes			
Rheidae			
Rhea americana (Linnaeus, 1758)	* NT (GL)		ExM, Rv/sP, Rv/sNP, FoI, ASI
Tinamiformes			
Tinamidae			
Tinamus tao Temminck, 1815	* VU (GL), VU (BL)		ASI
Crypturellus undulatus (Temminck, 1815)	*		ExM, Rv/sP, Rv/sNP, FoI, ASI
Crypturellus parvirostris (Wagler, 1827)	*		ExM, Rv/sP, Rv/sNP, FoI
Crypturellus tataupa (Temminck, 1815)	*		ExM, Rv/sP, Rv/sNP, FoI
Rhynchotus rufescens (Temminck, 1815)			ExM, Rv/sP, Rv/sNP, FoI
Nothura maculosa (Temminck, 1815)	*		ExM, Rv/sP
Anseriformes			
Anhimidae			
Anhima cornuta (Linnaeus, 1766)	*		Rv/sP, Rv/sNP, FoI
Chauna torquata (Oken, 1816)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Anatidae			
Dendrocygna bicolor (Vieillot, 1816)	*	INTRA	ExM, Rv/sP, FoI
Dendrocygna viduata (Linnaeus, 1766)		INTRA	ExM, Rv/sP, Rv/sNP, FoI, ASI
Dendrocygna autumnalis (Linnaeus, 1758)		INTRA	ExM, Rv/sP, Rv/sNP, FoI, ASI
Coscoroba coscoroba (Molina, 1782)		INTRA	ExM, Rv/sP, Rv/sNP, FoI
Neochen jubata (Spix, 1825)	* NT (GL), DD (BL)	INTRA	ExM, Rv/sP, FoI
Cairina moschata (Linnaeus, 1758)	*	INTRA	ExM, Rv/sP, Rv/sNP, FoI, ASI
Sarkidiornis sylvicola Ihering & Ihering, 1907	*	INTRA	ExM, Rv/sP, Rv/sNP, FoI
Callonetta leucophrys (Vieillot, 1816)		INTRA	Rv/sP, FoP, FoI
Amazonetta brasiliensis (Gmelin, 1789)	*		ExM, Rv/sP, Rv/sNP, FoP, FoI
Spatula versicolor (Vieillot, 1816)		INTRA	Rv/sP, FoI
Spatula platalea (Vieillot, 1816)		INTRA	Rv/sP, FoI
Anas bahamensis Linnaeus, 1758	*	INTRA	Rv/sP, FoI
Netta peposaca (Vieillot, 1816)		INTRA	Rv/sP, FoI
Nomonyx dominicus (Linnaeus, 1766)	*		ExM, Rv/sP, FoI
Oxyura vittata (Philippi, 1860)		INTRA	ExM, Rv/sP, FoP, FoI
Galliformes			
Cracidae			
Penelope superciliaris Temminck, 1815	*		ExM, Rv/sP, FoI
Penelope ochrogaster Pelzeln, 1870	* VU (GL), VU (BL)		ExM, Rv/sP, Rv/sNP, FoI, ASI
Aburria cumanensis (Jacquin, 1784)	* NT (GL)		ExM, Rv/sP, Rv/sNP, FoI, ASI
Aburria cujubi (Pelzeln, 1858)	* NT (BL)		ExM, Rv/sP, Rv/sNP, FoI, ASI
Ortalis canicollis (Wagler, 1830)	*		ExM, Rv/sP, Rv/sNP, FoI, ASI
Crax fasciolata Spix, 1825	* VU (GL)		ExM, Rv/sP, Rv/sNP, FoI, ASI
Pauxi tuberosa (Spix, 1825)			FoI
Podicipediformes			
Podicipedidae			
[*Rollandia rolland* (Quoy & Gaimard, 1824)]	*	INTRA	Rv/sP
Tachybaptus dominicus (Linnaeus, 1766)		INTRA	ExM, Rv/sP, FoI
Podilymbus podiceps (Linnaeus, 1758)		INTRA	Rv/sP, FoI
Podicephorus major (Boddaert, 1783)		INTRA	FoI
Columbiformes			
Columbidae			
Columba livia Gmelin, 1789			Rv/sP, Rv/sNP, FoI
Patagioenas speciosa (Gmelin, 1789)			ExM, Rv/sP, ASI
Patagioenas picazuro (Temminck, 1813)		INTRA	ExM, Rv/sP, Rv/sNP, FoI, ASI
Patagioenas cayennensis (Bonnaterre, 1792)			ExM, Rv/sP, Rv/sNP, FoI, ASI
[*Patagioenas subvinacea* (Lawrence, 1868)]	* VU (GL)		Rv/sP

Taxon	Status		Evidence
	Conservation	Migration	
Geotrygon montana (Linnaeus, 1758)	*		Rv/sP, Rv/sNP, FoAP
Leptotila verreauxi Bonaparte, 1855			ExM, Rv/sP, Rv/sNP, FoI, ASI
Leptotila rufaxilla (Richard & Bernard, 1792)	*		ExM, Rv/sP, Rv/sNP, FoI, ASI
Zenaida auriculata (Des Murs, 1847)		INTRA	ExM, Rv/sP, Rv/sNP, FoI
Claravis pretiosa (Ferrari-Perez, 1886)			ExM, Rv/sP, Rv/sNP, FoI
Uropelia campestris (Spix, 1825)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Columbina minuta (Linnaeus, 1766)			ExM, Rv/sP, Rv/sNP, FoI
Columbina talpacoti (Temminck, 1811)			ExM, Rv/sP, Rv/sNP, FoI
Columbina squammata (Lesson, 1831)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Columbina picui (Temminck, 1813)			ExM, Rv/sP, Rv/sNP, FoI
Cuculiformes			
Cuculidae			
Guira guira (Gmelin, 1788)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Crotophaga major Gmelin, 1788			ExM, Rv/sP, Rv/sNP, FoI, ASI
Crotophaga ani Linnaeus, 1758	*		ExM, Rv/sP, Rv/sNP, FoI, ASI
Tapera naevia (Linnaeus, 1766)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Dromococcyx phasianellus (Spix, 1824)	*		ExM, Rv/sP, Rv/sNP,
Dromococcyx pavoninus Pelzeln, 1870	*		Rv/sP, Rv/sNP, FoI, ASI
Coccycua minuta (Vieillot, 1817)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Micrococcyx cinereus (Vieillot, 1817)	*	INTRA	Rv/sP, Rv/sNP, FoI
Piaya cayana (Linnaeus, 1766)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Coccyzus melacoryphus Vieillot, 1817		INTRA	ExM, Rv/sP, Rv/sNP, FoI, ASI
Coccyzus americanus (Linnaeus, 1758)	*	INTER	Rv/sP, Rv/sNP, FoI
Coccyzus euleri Cabanis, 1873		INTRA	Rv/sP, Rv/sNP, FoI
Nyctibiiformes			
Nyctibiidae			
Nyctibius grandis (Gmelin, 1789)	*		ExM, Rv/sP, Rv/sNP, FoI, ASI
Nyctibius griseus (Gmelin, 1789)	*		ExM, Rv/sP, Rv/sNP, FoI
Caprimulgiformes			
Caprimulgidae			
[*Nyctiphrynus ocellatus* (Tschudi, 1844)]	*		Rv/sP
Antrostomus rufus (Boddaert, 1783)	*	INTRA	ExM, Rv/sP, Rv/sNP, FoI, ASI
Lurocalis semitorquatus (Gmelin, 1789)		INTRA	Rv/sP, FoI
Nyctiprogne leucopyga (Spix, 1825)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Nyctidromus albicollis (Gmelin, 1789)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Hydropsalis parvula Gould, 1837			ExM, Rv/sP, Rv/sNP, FoI, ASI
Hydropsalis maculicaudus (Lawrence, 1862)			Rv/sP, Rv/sNP, FoI, ASI
Hydropsalis torquata (Gmelin, 1789)			ExM, Rv/sP, Rv/sNP, FoI
Nannochordeiles pusillus (Gould, 1861)		INTRA	ExM, Rv/sP
Podager nacunda (Vieillot, 1817)		INTRA	ExM, Rv/sP, Rv/sNP, FoI, ASI
Chordeiles minor (Forster, 1771)	*	INTER	Rv/sP, FoI
[*Chordeiles acutipennis* (Hermann, 1783)]		INTRA	Rv/sP
Apodiformes			
Apodidae			
Cypseloides fumigatus (Streubel, 1848)			FoI
Streptoprocne zonaris (Shaw, 1796)	*		Rv/sP, FoI
Chaetura meridionalis Hellmayr, 1907		INTRA	ExM, Rv/sP, Rv/sNP, FoI
[*Tachornis squamata* (Cassin, 1853)]			Rv/sP
Trochilidae			
Glaucis hirsutus (Gmelin, 1788)	*		ExM, Rv/sP, Rv/sNP, FoI
Phaethornis nattereri Berlepsch, 1887	*		ExM, Rv/sP, FoI
[*Phaethornis ruber* (Linnaeus, 1758)]	*		Rv/sP
Phaethornis subochraceus Todd, 1915	* DD (BL)		ExM, Rv/sP, Rv/sNP, FoI, ASI
Phaethornis pretrei (Lesson & Delattre, 1839)			ExM, Rv/sP, Rv/sNP, FoI
Colibri serrirostris (Vieillot, 1816)			Rv/sP, FoI
Heliactin bilophus (Temminck, 1820)			ExM, Rv/sP
Polytmus guainumbi (Pallas, 1764)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Chrysolampis mosquitus (Linnaeus, 1758)			ExM, Rv/sP, Rv/sNP, FoP, FoI
Anthracothorax nigricollis (Vieillot, 1817)		INTRA	ExM, Rv/sP, Rv/sNP, FoI
Lophornis gouldii (Lesson, 1832)	VU (GL)		ExM, Rv/sP

Taxon	Status		Evidence
	Conservation	Migration	
Lophornis magnificus (Vieillot, 1817)			Rv/sP, FoI
Heliomaster longirostris (Audebert & Vieillot, 1801)			Rv/sP, FoI
Heliomaster furcifer (Shaw, 1812)	*		ExM, Rv/sP, Rv/sNP, FoI
Calliphlox amethystina (Boddaert, 1783)	*		ExM, Rv/sP, Rv/sNP, FoI
Chlorostilbon lucidus (Shaw, 1812)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Thalurania furcata (Gmelin, 1788)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Eupetomena macroura (Gmelin, 1788)			ExM, Rv/sP, Rv/sNP, FoI
Aphantochroa cirrochloris (Vieillot, 1818)			Rv/sP, FoI
Chrysuronia versicolor (Vieillot, 1818)			ExM, Rv/sP, Rv/sNP
Leucochloris albicollis (Vieillot, 1818)			FoI
Chionomesa fimbriata (Gmelin, 1788)			ExM, Rv/sP, Rv/sNP, FoI, ASI
[*Hylocharis sapphirina* (Gmelin, 1788)]			Rv/sP, Rv/sNP
Hylocharis chrysura (Shaw, 1812)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Chlorestes cyanus (Vieillot, 1818)			ExM, Rv/sP
Gruiformes			
Aramidae			
Aramus guarauna (Linnaeus, 1766)		INTRA	ExM, Rv/sP, Rv/sNP, FoI, ASI
Rallidae			
Porphyrio martinica (Linnaeus, 1766)	*	INTRA	ExM, Rv/sP, Rv/sNP, FoI
Porphyrio flavirostris (Gmelin, 1789)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Rufirallus viridis (Statius Muller, 1776)			Rv/sP, FoI, ASI
Laterallus flaviventer (Boddaert, 1783)	DD (BL)		FoI
Laterallus melanophaius (Vieillot, 1819)			Rv/sP, Rv/sNP, FoI, ASI
Laterallus exilis (Temminck, 1831)			ExM, Rv/sP, Rv/sNP, FoI, ASI
[*Laterallus xenopterus* Conover, 1934]	* VU (GL), DD (BL)		Rv/sNP
[*Coturnicops notatus* (Gould, 1841)]	* DD (BL)		Rv/sP
Mustelirallus albicollis (Vieillot, 1819)			ExM, Rv/sP, Rv/sNP, FoI, ASI
[*Neocrex erythrops* (Sclater, 1867)]		INTRA	Rv/sP, Rv/sNP
Pardirallus maculatus (Boddaert, 1783)		INTRA	Rv/sP, FoP, FoI
Pardirallus nigricans (Vieillot, 1819)			Rv/sP, Rv/sNP, FoI
Aramides ypecaha (Vieillot, 1819)	*		ExM, Rv/sP, Rv/sNP, FoI
Aramides cajaneus (Statius Muller, 1776)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Gallinula galeata (Lichtenstein, 1918)		INTRA	ExM, Rv/sP, Rv/sNP
[*Fulica leucoptera* Vieillot, 1817]		INTRA	Rv/sP
Heliornithidae			
Heliornis fulica (Boddaert, 1783)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Charadriiformes			
Charadriidae			
Pluvialis dominica (Statius Muller, 1776)	* DD (BL)	INTER	ExM, Rv/sP, Rv/sNP, FoI
[*Pluvialis squatarola* (Linnaeus, 1758)]	*	INTER	Rv/sP
Vanellus cayanus (Latham, 1790)		INTRA	ExM, Rv/sP, Rv/sNP, FoI, ASI
Vanellus chilensis (Molina, 1782)			ExM, Rv/sP, Rv/sNP, FoI, ASI
[*Charadrius semipalmatus* Bonaparte, 1825]		INTRA	Rv/sP
Charadrius collaris Vieillot, 1818	*	INTRA	ExM, Rv/sP, Rv/sNP, FoI
Recurvirostridae			
Himantopus mexicanus (Statius Muller, 1776)		INTRA	Rv/sP, FoI
Himantopus melanurus Vieillot, 1817		INTRA	ExM, Rv/sP, FoI
Scolopacidae			
Bartramia longicauda (Bechstein, 1812)		INTER	ExM, Rv/sP, Rv/sNP, FoI
Numenius borealis (Forster, 1772)	CR/PE (GL)	INTER	ExM, Rv/sP
[*Numenius hudsonicus* Latham, 1790]	*	INTER	Rv/sP
Limosa haemastica (Linnaeus, 1758)	*	INTER	ExM, Rv/sP, Rv/sNP, FoI
[*Arenaria interpres* (Linnaeus, 1758)]	*	INTER	Rv/sP
[*Calidris canutus* (Linnaeus, 1758)]	* NT (GL), CR (BL)	INTER	Rv/sP
Calidris himantopus (Bonaparte, 1826)		INTER	Rv/sP, FoI
Calidris alba (Pallas, 1764)		INTER	Rv/sP, FoI
Calidris bairdii (Coues, 1861)		INTER	Rv/sP, FoI
[*Calidris minutilla* (Vieillot, 1819)]	* DD (BL)	INTER	Rv/sP
Calidris fuscicollis (Vieillot, 1819)	*	INTER	ExM, Rv/sP, Rv/sNP, FoI, ASI
Calidris subruficollis (Vieillot, 1819)	* NT (GL), VU (BL)	INTER	Rv/sP, FoI

Taxon	Status		Evidence
	Conservation	Migration	
Calidris melanotos (Vieillot, 1819)		INTER	ExM, Rv/sP, Rv/sNP, FoP, FoI
[*Calidris pusilla* (Linnaeus, 1766)]	* NT (GL), EN (BL)	INTER	Rv/sP
[*Gallinago undulata* (Boddaert, 1783)]	* DD (BL)	INTRA	Rv/sP
Gallinago paraguaiae (Vieillot, 1816)		INTRA	ExM, Rv/sP, Rv/sNP, FoI
Phalaropus tricolor (Vieillot, 1819)	DD (BL)	INTER	ExM, Rv/sP, Rv/sNP, FoI
Actitis macularius (Linnaeus, 1766)	*	INTER	ExM, Rv/sP, Rv/sNP, FoI, ASI
Tringa solitaria Wilson, 1813		INTER	ExM, Rv/sP, Rv/sNP, FoI, ASI
Tringa melanoleuca (Gmelin, 1789)		INTER	ExM, Rv/sP, Rv/sNP, FoI, ASI
Tringa flavipes (Gmelin, 1789)	*	INTER	ExM, Rv/sP, Rv/sNP, FoI, ASI
Jacanidae			
Jacana jacana (Linnaeus, 1766)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Laridae			
Xema sabini (Sabine, 1819)		INTER	FoI
Chroicocephalus maculipennis (Lichtenstein, 1823)		INTRA	FoI
[*Chroicocephalus cirrocephalus* (Vieillot, 1818)]		INTRA	Rv/sP
Leucophaeus pipixcan (Wagler, 1831)		INTER	FoP
Rynchops niger Linnaeus, 1758	*	INTRA	ExM, Rv/sP, Rv/sNP, FoI, ASI
Sternula superciliaris (Vieillot, 1819)		INTRA	ExM, Rv/sP, Rv/sNP, FoI
Phaetusa simplex (Gmelin, 1789)		INTRA	ExM, Rv/sP, Rv/sNP, FoI, ASI
Chlidonias niger (Linnaeus, 1758)	*	INTER	Rv/sP, FoP
[*Sterna hirundo* Linnaeus, 1758]		INTER	Rv/sP
Sterna trudeaui Audubon, 1838		INTRA	Rv/sP, FoI
Eurypygiformes			
Eurypygidae			
Eurypyga helias (Pallas, 1781)	*		ExM, Rv/sP, Rv/sNP, FoI, ASI
Ciconiiformes			
Ciconiidae			
Ciconia maguari (Gmelin, 1789)		INTRA	ExM, Rv/sP, Rv/sNP, FoI
Jabiru mycteria (Lichtenstein, 1819)		INTRA	ExM, Rv/sP, Rv/sNP, FoI, ASI
Mycteria americana Linnaeus, 1758	*	INTRA	ExM, Rv/sP, Rv/sNP, FoI
Suliformes			
Anhingidae			
Anhinga anhinga (Linnaeus, 1766)	*		ExM, Rv/sP, Rv/sNP, FoI, ASI
Phalacrocoracidae			
Nannopterum brasilianus (Gmelin, 1789)		INTRA	ExM, Rv/sP, Rv/sNP, FoI, ASI
Pelecaniformes			
Ardeidae			
Tigrisoma lineatum (Boddaert, 1783)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Agamia agami (Gmelin, 1789)	* VU (GL)		ExM, Rv/sP, FoP, FoI, ASI
Cochlearius cochlearius (Linnaeus, 1766)	*		ExM, Rv/sP, Rv/sNP, FoI, ASI
Zebrilus undulatus (Gmelin, 1789)	* NT (GL)		ExM, Rv/sP, FoP, FoI, ASI
Botaurus pinnatus (Wagler, 1829)			Rv/sP, FoI
Ixobrychus exilis (Gmelin, 1789)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Ixobrychus involucris (Vieillot, 1823)			Rv/sP, FoI
Nycticorax nycticorax (Linnaeus, 1758)	*		ExM, Rv/sP, Rv/sNP, FoI, ASI
Butorides striata (Linnaeus, 1758)	*		ExM, Rv/sP, Rv/sNP, FoI, ASI
Bubulcus ibis (Linnaeus, 1758)			Rv/sP, Rv/sNP, FoI
Ardea cocoi Linnaeus, 1766			ExM, Rv/sP, Rv/sNP, FoI, ASI
Ardea alba Linnaeus, 1758		INTRA	ExM, Rv/sP, Rv/sNP, FoI, ASI
Syrigma sibilatrix (Temminck, 1824)			ExM, Rv/sP, Rv/sNP, FoI
Pilherodius pileatus (Boddaert, 1783)			ExM, Rv/sP, Rv/sNP, FoI
Egretta thula (Molina, 1782)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Egretta caerulea (Linnaeus, 1758)		INTRA	ExM, Rv/sP, Rv/sNP, FoP, FoI
Threskiornithidae			
Plegadis chihi (Vieillot, 1817)		INTRA	ExM, Rv/sP, Rv/sNP, FoI, ASI
Mesembrinibis cayennensis (Gmelin, 1789)	*		ExM, Rv/sP, Rv/sNP, FoI, ASI
Phimosus infuscatus (Lichtenstein, 1823)		INTRA	ExM, Rv/sP, Rv/sNP, FoI, ASI
Theristicus caerulescens (Vieillot, 1817)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Theristicus caudatus (Boddaert, 1783)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Platalea ajaja Linnaeus, 1758		INTRA	ExM, Rv/sP, Rv/sNP, FoI, ASI

Taxon	Status		Evidence
	Conservation	Migration	
Cathartiformes			
Cathartidae			
Sarcoramphus papa (Linnaeus, 1758)	* NT (BL)		ExM, Rv/sP, Rv/sNP, FoI
Coragyps atratus (Bechstein, 1793)			ExM, Rv/sP, Rv/sNP, FoI
Cathartes aura (Linnaeus, 1758)			ExM, Rv/sP, Rv/sNP, FoI
Cathartes burrovianus Cassin, 1845			Rv/sP, Rv/sNP, FoI
Accipitriformes			
Pandionidae			
Pandion haliaetus (Linnaeus, 1758)		INTER	ExM, Rv/sP, Rv/sNP, FoI
Accipitridae			
Gampsonyx swainsonii Vigors, 1825			ExM, Rv/sP, Rv/sNP, FoI
Elanus leucurus (Vieillot, 1818)		INTRA	ExM, Rv/sP, Rv/sNP,
Chondrohierax uncinatus (Temminck, 1822)	*		ExM, Rv/sP, Rv/sNP, FoI
Leptodon cayanensis (Latham, 1790)	*		ExM, Rv/sP, Rv/sNP, FoI, ASI
Elanoides forficatus (Linnaeus, 1758)		INTER	ExM, Rv/sP, Rv/sNP, FoI
Harpia harpyja (Linnaeus, 1758)	* NT (GL), VU (BL)		Rv/sP, FoP, FoI
Spizaetus tyrannus (Wied, 1820)	*		ExM, Rv/sP, FoP, FoI
Spizaetus melanoleucus (Vieillot, 1816)	*		ExM, Rv/sP, Rv/sNP, FoI
Spizaetus ornatus (Daudin, 1800)	* NT (GL), NT (BL)		Rv/sP, FoI
Busarellus nigricollis (Latham, 1790)	*		ExM, Rv/sP, Rv/sNP, FoI, ASI
Rostrhamus sociabilis (Vieillot, 1817)		INTRA	ExM, Rv/sP, Rv/sNP, FoI, ASI
Helicolestes hamatus (Temminck, 1821)	*		Rv/sP, FoI
Harpagus bidentatus (Latham, 1790)	*		FoI
Harpagus diodon (Temminck, 1823)	*	INTRA	Rv/sP, Rv/sNP, FoI
Ictinia mississippiensis (Wilson, 1811)		INTER	Rv/sP, Rv/sNP, FoI
Ictinia plumbea (Gmelin, 1788)	*	INTRA	ExM, Rv/sP, Rv/sNP, FoI, ASI
Circus buffoni (Gmelin, 1788)	*		ExM, Rv/sP, Rv/sNP, FoI, ASI
Hieraspiza superciliosa (Linnaeus, 1766)	*		Rv/sP, Rv/sNP, FoI
Accipiter poliogaster (Temminck, 1824)	* NT (GL), DD (BL)		Rv/sP, FoP, FoI
Accipiter striatus Vieillot, 1808			Rv/sP, Rv/sNP, FoI
Accipiter bicolor (Vieillot, 1817)			ExM, Rv/sP, Rv/sNP, FoI
Geranospiza caerulescens (Vieillot, 1817)	*		ExM, Rv/sP, Rv/sNP, FoI, ASI
Heterospizias meridionalis (Latham, 1790)			ExM, Rv/sP, Rv/sNP, FoI
Urubitinga urubitinga (Gmelin, 1788)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Urubitinga coronata (Vieillot, 1817)	* EN (GL), EN (BL)		Rv/sP, Rv/sNP, FoP, FoI, ASI
Rupornis magnirostris (Gmelin, 1788)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Parabuteo unicinctus (Temminck, 1824)	*		Rv/sP, FoP, FoI
Geranoaetus albicaudatus (Vieillot, 1816)			ExM, Rv/sP, Rv/sNP, FoI
Geranoaetus melanoleucus (Vieillot, 1819)			Rv/sP, FoP, FoI
Pseudastur albicollis (Latham, 1790)	*		ExM, Rv/sP, Rv/sNP, FoI, FOAP
Buteo nitidus (Latham, 1790)	*		ExM, Rv/sP, Rv/sNP, FoI
[*Buteo platypterus* (Vieillot, 1823)]		INTER	Rv/sP
Buteo brachyurus Vieillot, 1816		INTRA	ExM, Rv/sP, Rv/sNP
Buteo swainsoni Bonaparte, 1838		INTER	FoI
Buteo albonotatus Kaup, 1847			Rv/sP, Rv/sNP, FoI
Strigiformes			
Tytonidae			
Tyto furcata (Temminck, 1827)			ExM, Rv/sP, Rv/sNP, FoI
Strigidae			
Megascops choliba (Vieillot, 1817)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Megascops usta (Sclater, 1858)			FoI, ASI
Pulsatrix perspicillata (Latham, 1790)	*		ExM, Rv/sP, Rv/sNP, FoI
Bubo virginianus (Gmelin, 1788)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Strix virgata (Cassin, 1849)	*		Rv/sP, FoI, ASI
Strix huhula Daudin, 1800			ExM, Rv/sP, Rv/sNP, FoI, ASI
Glaucidium hardyi Vielliard, 1990			ExM, Rv/sP
Glaucidium brasilianum (Gmelin, 1788)	*		ExM, Rv/sP, Rv/sNP, FoI, ASI
Athene cunicularia (Molina, 1782)	*		ExM, Rv/sP, Rv/sNP, FoI
[*Aegolius harrisii* (Cassin, 1849)]			Rv/sP
Asio clamator (Vieillot, 1808)			ExM, Rv/sP, Rv/sNP,

Taxon	Status		Evidence
	Conservation	Migration	
Asio stygius (Wagler, 1832)	*		ExM, Rv/sP, Rv/sNP, ASI
Asio flammeus (Pontoppidan, 1763)	*		Rv/sP, FoI
Trogoniformes			
Trogonidae			
Trogon melanurus Swainson, 1838			ExM, Rv/sP
Trogon curucui Linnaeus, 1766	*		ExM, Rv/sP, Rv/sNP, FoI, ASI
Coraciiformes			
Momotidae			
Momotus momota (Linnaeus, 1766)	*		ExM, Rv/sP, Rv/sNP, FoI, ASI
Alcedinidae			
Megaceryle torquata (Linnaeus, 1766)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Chloroceryle amazona (Latham, 1790)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Chloroceryle aenea (Pallas, 1764)	*		ExM, Rv/sP, Rv/sNP, FoI, ASI
Chloroceryle americana (Gmelin, 1788)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Chloroceryle inda (Linnaeus, 1766)	*		ExM, Rv/sP, Rv/sNP, FoI, ASI
Galbuliformes			
Galbulidae			
Brachygalba lugubris (Swainson, 1838)	*		ExM, Rv/sP
Galbula ruficauda Cuvier, 1816	*		ExM, Rv/sP, Rv/sNP, FoI, ASI
Bucconidae			
Chelidoptera tenebrosa (Pallas, 1782)			Rv/sP, Rv/sNP, FoI
Monasa nigrifrons (Spix, 1824)	*		ExM, Rv/sP, Rv/sNP, FoI, ASI
Nonnula ruficapilla (Tschudi, 1844)			ExM
[*Nonnula rubecula* (Spix, 1824)]	*		Rv/sP
Nystalus maculatus (Gmelin, 1788)			ExM, Rv/sP, FoI
Nystalus striatipectus (Sclater, 1854)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Nystalus chacuru (Vieillot, 1816)			ExM, Rv/sP, Rv/sNP, FoI
Piciformes			
Ramphastidae			
Ramphastos toco Statius Muller, 1776	*		ExM, Rv/sP, Rv/sNP, FoI, ASI
Ramphastos vitellinus Lichtenstein, 1823	* VU (GL)		ExM, Rv/sP
Pteroglossus inscriptus Swainson, 1822	*		FoI
Pteroglossus castanotis Gould, 1834	*		ExM, Rv/sP, Rv/sNP, FoI, ASI
Pteroglossus bitorquatus Vigors, 1826	* EN (GL), NT (BL)		FoI
Picidae			
Picumnus aurifrons Pelzeln, 1870	*		ExM
Picumnus cirratus Temminck, 1825	*		ExM, Rv/sP, FoI
Picumnus albosquamatus d'Orbigny, 1840	*		ExM, Rv/sP, Rv/sNP, FoI, ASI
Melanerpes candidus (Otto, 1796)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Melanerpes cruentatus (Boddaert, 1783)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Melanerpes flavifrons (Vieillot, 1818)			Rv/sP, FoI
Melanerpes cactorum (d'Orbigny, 1839)	*		ExM, Rv/sP, Rv/sNP, FoI, ASI
Veniliornis affinis (Swainson, 1821)			ExM, Rv/sNP, FoI
Veniliornis passerinus (Linnaeus, 1766)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Veniliornis mixtus (Boddaert, 1783)			ExM, Rv/sP, Rv/sNP, FoI
Campephilus rubricollis (Boddaert, 1783)	*		Rv/sP, FoI, ASI
Campephilus melanoleucos (Gmelin, 1788)	*		ExM, Rv/sP, Rv/sNP, FoI, ASI
Campephilus leucopogon (Valenciennes, 1826)			ExM, Rv/sP, Rv/sNP, FoI
Dryocopus lineatus (Linnaeus, 1766)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Celeus torquatus (Boddaert, 1783)			ExM, Rv/sP
Celeus flavus (Statius Muller, 1776)	* NT (BL)		Rv/sP, Rv/sNP, FoP, FoI, ASI
Celeus lugubris (Malherbe, 1851)	*		ExM, Rv/sP, Rv/sNP, FoI, ASI
Celeus flavescens (Gmelin, 1788)	*		ExM, Rv/sP, Rv/sNP,
Piculus chrysochloros (Vieillot, 1818)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Colaptes melanochloros (Gmelin, 1788)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Colaptes campestris (Vieillot, 1818)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Cariamiformes			
Cariamidae			
Cariama cristata (Linnaeus, 1766)			ExM, Rv/sP, Rv/sNP, FoI, ASI

Taxon	Status		Evidence
	Conservation	Migration	
Falconiformes			
Falconidae			
Herpetotheres cachinnans (Linnaeus, 1758)	*		ExM, Rv/sP, Rv/sNP, FoI, ASI
Micrastur ruficollis (Vieillot, 1817)	*		ExM, Rv/sP
Micrastur semitorquatus (Vieillot, 1817)	*		ExM, Rv/sP, Rv/sNP, FoI, ASI
Caracara plancus (Miller, 1777)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Milvago chimachima (Vieillot, 1816)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Milvago chimango (Vieillot, 1816)			Rv/sP, ASI
Falco sparverius Linnaeus, 1758			ExM, Rv/sP, Rv/sNP, FoI
Falco rufigularis Daudin, 1800	*		ExM, Rv/sP, Rv/sNP, FoI, ASI
Falco deiroleucus Temminck, 1825	* NT (GL)		Rv/sP, FoI
Falco femoralis Temminck, 1822	*		ExM, Rv/sP, Rv/sNP, FoI
Falco peregrinus Tunstall, 1771		INTER	ExM, Rv/sP, FoI
Psittaciformes			
Psittacidae			
Myiopsitta monachus (Boddaert, 1783)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Brotogeris chiriri (Vieillot, 1818)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Pionus maximiliani (Kuhl, 1820)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Pionus menstruus (Linnaeus, 1766)	*		ExM, Rv/sP, Rv/sNP, FoI, ASI
Alipiopsitta xanthops (Spix, 1824)	* NT (GL), NT (BL)		ExM, Rv/sP, Rv/sNP, FoI, ASI
Amazona aestiva (Linnaeus, 1758)	* NT (GL), NT (BL)		ExM, Rv/sP, Rv/sNP, FoI, ASI
Amazona amazonica (Linnaeus, 1766)	*		ExM, Rv/sP, Rv/sNP, FoI, ASI
Forpus xanthopterygius (Spix, 1824)			Rv/sP, Rv/sNP, FoI
Pyrrhura devillei (Massena & Souancé, 1854)	NT (GL), NT (BL)		ExM, Rv/sP, Rv/sNP, ASI
Pyrrhura frontalis (Vieillot, 1817)			FoI
Pyrrhura molinae (Massena & Souancé, 1854)	* NT (BL)		ExM, Rv/sP, Rv/sNP, FoI
Anodorhynchus hyacinthinus (Latham, 1790)	* VU (GL), NT (BL)		ExM, Rv/sP, Rv/sNP, FoI, ASI
Eupsittula aurea (Gmelin, 1788)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Aratinga nenday (Vieillot, 1823)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Orthopsittaca manilatus (Boddaert, 1783)			ExM, Rv/sP, FoI
Primolius maracana (Vieillot, 1816)	* NT (GL), NT (BL)		ExM, Rv/sP, FoI
Primolius auricollis (Cassin, 1853)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Ara ararauna (Linnaeus, 1758)	*		ExM, Rv/sP, Rv/sNP, FoI, ASI
Ara chloropterus Gray, 1859	* NT (BL)		ExM, Rv/sP, Rv/sNP, FoI, ASI
Thectocercus acuticaudatus (Vieillot, 1818)	*		ExM, Rv/sP, Rv/sNP, FoI, ASI
Diopsittaca nobilis (Linnaeus, 1758)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Psittacara leucophthalmus (Statius Muller, 1776)	*		ExM, Rv/sP, Rv/sNP, FoI, ASI
Passeriformes			
Thamnophilidae			
Myrmorchilus strigilatus (Wied, 1831)	*		ExM, Rv/sP, Rv/sNP
[*Formicivora grisea* (Boddaert, 1783)]			Rv/sP
Formicivora melanogaster Pelzeln, 1868	*		ExM, Rv/sP, FoI, ASI
Formicivora rufa (Wied, 1831)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Dysithamnus mentalis (Temminck, 1823)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Herpsilochmus longirostris Pelzeln, 1868			ExM, Rv/sP, Rv/sNP, FoI, ASI
Herpsilochmus atricapillus Pelzeln, 1868	*		Rv/sP, FoI
Thamnophilus doliatus (Linnaeus, 1764)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Thamnophilus sticturus Pelzeln, 1868			ExM, Rv/sP, Rv/sNP, FoI, ASI
Thamnophilus pelzelni Hellmayr, 1924	*		ExM, FoI, 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, FoI, ASI
Hypocnemoides maculicauda (Pelzeln, 1868)	*		ExM, Rv/sP, Rv/sNP, FoI, ASI
Pyriglena maura (Ménétries, 1835)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Cercomacra cinerascens (Sclater, 1857)	*		ExM, Rv/sP
Cercomacra melanaria (Ménétriès, 1835)	*		ExM, Rv/sP, Rv/sNP, FoI, ASI
Drymophyla devillei (Ménégaux & Hellmayr, 1906)	*		ExM, Rv/sP
Conopophagidae			
Conopophaga lineata (Wied, 1831)			ExM, Rv/sP, FoI
Dendrocolaptidae			
Sittasomus griseicapillus (Vieillot, 1818)	*		ExM, Rv/sP, Rv/sNP, FoI, ASI

Taxon	Status		Evidence
	Conservation	Migration	
Dendrocincla fuliginosa (Vieillot, 1818)	*		Rv/sP, FoI
[*Glyphorynchus spirurus* (Vieillot, 1819)]	*		Rv/sP
Dendrocolaptes picumnus Lichtenstein, 1820			ExM, Rv/sP, Rv/sNP, FoI, ASI
Dendrocolaptes platyrostris Spix, 1825			ExM, Rv/sP, Rv/sNP, FoI, ASI
Xiphocolaptes major (Vieillot, 1818)	*		ExM, Rv/sP, Rv/sNP, FoI, ASI
Xiphorhynchus guttatoides (Lafresnaye, 1850)	*		ExM, Rv/sP, Rv/sNP, FoI, ASI
Dendroplex picus (Gmelin, 1788)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Campylorhamphus trochilirostris (Lichtenstein, 1820)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Lepidocolaptes angustirostris (Vieillot, 1818)			ExM, Rv/sP, Rv/sNP, FoI, ASI
[*Lepidocolaptes fuscicapillus* (Pelzeln, 1868)]			Rv/sP
Xenopidae			
Xenops rutilans Temminck, 1821			ExM, Rv/sP, Rv/sNP, FoI
Furnariidae			
Furnarius leucopus Swainson, 1838			ExM, Rv/sP, Rv/sNP, FoI, ASI
Furnarius rufus (Gmelin, 1788)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Phleocryptes melanops (Vieillot, 1817)	*		FoI
Dendroma rufa (Vieillot, 1818)	*		Rv/sP, FoI
Clibanornis rectirostris (Wied, 1831)	*		ExM, Rv/sP, FoI, ASI
Phacellodomus rufifrons (Wied, 1821)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Phacellodomus ruber (Vieillot, 1817)	*		ExM, Rv/sP, Rv/sNP, FoI, ASI
Anumbius annumbi (Vieillot, 1817)			ExM, Rv/sP, FoI
Cranioleuca vulpina (Pelzeln, 1856)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Cranioleuca pyrrhophia (Vieillot, 1818)			FoI
Pseudoseisura unirufa (d'Orbigny & Lafresnaye, 1838)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Certhiaxis cinnamomeus (Gmelin, 1788)	*		ExM, Rv/sP, Rv/sNP, FoI, ASI
Schoeniophylax phryganophilus (Vieillot, 1817)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Synallaxis scutata Sclater, 1859	*		ExM, Rv/sP
Synallaxis albilora Pelzeln, 1856			ExM, Rv/sP, Rv/sNP, FoI, ASI
Synallaxis hypospodia Sclater, 1874			ExM, Rv/sP, Rv/sNP, FoI, ASI
Synallaxis albescens Temminck, 1823			ExM, Rv/sP, Rv/sNP
Synallaxis frontalis Pelzeln, 1859			ExM, Rv/sP, Rv/sNP, FoI, ASI
Pipridae			
Neopelma pallescens (Lafresnaye, 1853)			ExM, Rv/sP, Rv/sNP, FoI, ASI
[*Chiroxiphia caudata* (Shaw & Nodder, 1793)]			Rv/sP
Antilophia galeata (Lichtenstein, 1823)	*		ExM, Rv/sP, Rv/sNP, FoI, ASI
[*Manacus manacus* (Linnaeus, 1766)]			Rv/sP
Pipra fasciicauda Hellmayr, 1906			ExM, Rv/sP, Rv/sNP, FoI, ASI
Machaeropterus pyrocephalus (Sclater, 1852)	*		FoI, ASI
Cotingidae			
Cephalopterus ornatus Saint-Hilaire, 1809			ExM, Rv/sP
Gymnoderus foetidus (Linnaeus, 1758)	*		ExM, Rv/sP, FoI
Tityridae			
Tityra inquisitor (Lichtenstein, 1823)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Tityra cayana (Linnaeus, 1766)	*	INTRA	ExM, Rv/sP, Rv/sNP, FoI
Tityra semifasciata (Spix, 1825)			ExM, Rv/sP, FoI
Pachyramphus viridis (Vieillot, 1816)		INTRA	ExM, Rv/sP, Rv/sNP, FoI, ASI
[*Pachyramphus castaneus* (Jardine & Selby, 1827)]			Rv/sP
Pachyramphus polychopterus (Vieillot, 1818)		INTRA	ExM, Rv/sP, Rv/sNP, FoI, ASI
Pachyramphus marginatus (Lichtenstein, 1823)	*		Rv/sP, FoI
Pachyramphus validus (Lichtenstein, 1823)	*	INTRA	Rv/sP, FoI
Xenopsaris albinucha (Burmeister, 1869)			ExM, Rv/sP, Rv/sNP, FoI
Onychorhynchidae			
[*Myiobius barbatus* (Gmelin, 1789)]			Rv/sP
Platyrinchidae			
Platyrinchus mystaceus Vieillot, 1818			Rv/sP, FoI
Rhynchocyclidae			
Mionectes oleagineus (Lichtenstein, 1823)			Rv/sP, FoI
Leptopogon amaurocephalus Tschudi, 1846	*		ExM, Rv/sP, Rv/sNP, ASI
Corythopis delalandi (Lesson, 1830)			ExM, Rv/sP, ASI
Tolmomyias sulphurescens (Spix, 1825)			ExM, Rv/sP, Rv/sNP, FoI, ASI

Taxon	Status		Evidence
	Conservation	Migration	
Tolmomyias flaviventris (Wied, 1831)			Rv/sP, FoI, ASI
Todirostrum cinereum (Linnaeus, 1766)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Poecilotriccus latirostris (Pelzeln, 1868)			ExM, Rv/sP, Rv/sNP, FoI, ASI
[*Myiornis ecaudatus* (d'Orbigny & Lafresnaye, 1837)]	*		Rv/sP
Hemitriccus striaticollis (Lafresnaye, 1853)	*		ExM, Rv/sP, FoI, ASI
Hemitriccus margaritaceiventer (d'Orbigny & Lafresnaye, 1837)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Tyrannidae			
Hirundinea ferruginea (Gmelin, 1788)		INTRA	Rv/sP, FoI
Inezia inornata (Salvadori, 1897)	*	INTRA	ExM, Rv/sP, Rv/sNP, FoI, ASI
Euscarthmus meloryphus Wied, 1831			ExM, Rv/sP, Rv/sNP, FoI, ASI
Camptostoma obsoletum (Temminck, 1824)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Elaenia flavogaster (Thunberg, 1822)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Elaenia spectabilis Pelzeln, 1868	*	INTRA	ExM, Rv/sP, Rv/sNP, FoI, ASI
Elaenia chilensis Hellmayr, 1927		INTRA	ExM, Rv/sP, FoP
Elaenia parvirostris Pelzeln, 1868		INTRA	ExM, Rv/sP, FoI
[*Elaenia mesoleuca* (Deppe, 1830)]	*	INTRA	Rv/sP
[*Elaenia cristata* Pelzeln, 1868]	*	INTRA	Rv/sP, Rv/sNP,
Elaenia chiriquensis Lawrence, 1865	*	INTRA	ExM, Rv/sP
[*Elaenia obscura* (d'Orbigny & Lafresnaye, 1837)]			Rv/sP
Suiriri suiriri (Vieillot, 1818)	*		ExM, Rv/sP, Rv/sNP, FoI
Myiopagis gaimardii (d'Orbigny, 1839)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Myiopagis caniceps (Swainson, 1835)	*		Rv/sP, Rv/sNP, FoI
Myiopagis viridicata (Vieillot, 1817)		INTRA	ExM, Rv/sP, Rv/sNP, FoI, ASI
Capsiempis flaveola (Lichtenstein, 1823)		INTRA	ExM, Rv/sP, Rv/sNP, FoI
Phaeomyias murina (Spix, 1825)			ExM, Rv/sP, Rv/sNP, FoI, ASI
[*Phyllomyias reiseri* Hellmayr, 1905]	* DD (BL)		Rv/sP
[*Phyllomyias fascitaus* (Thunberg, 1822)]	*		Rv/sP
Polystictus pectoralis (Vieillot, 1817)	* NT (GL), NT (BL)		Rv/sP, Rv/sNP, FoI
Pseudocolopteryx sclateri (Oustalet, 1892)	*		ExM, Rv/sP, FoI
Pseudocolopteryx acutipennis (Sclater & Salvin, 1873)	*	INTRA	ExM, Rv/sP, FoI
Pseudocolopteryx flaviventris (d'Orbigny & Lafresnaye, 1837)		INTRA	FoI
Serpophaga nigricans (Vieillot, 1817)			FoI
Serpophaga subcristata (Vieillot, 1817)			ExM, Rv/sP, Rv/sNP, FoI
Serpophaga griseicapilla Straneck, 2008		INTRA	FoI, ASI
[*Attila phoenicurus* Pelzeln, 1868]	*	INTRA	Rv/sP
[*Attila cinnamomeus* (Gmelin, 1789)]	*		Rv/sP, Rv/sNP
Attila bolivianus Lafresnaye, 1848	*		ExM, Rv/sP, Rv/sNP, FoI, ASI
Attila spadiceus (Gmelin, 1789)			Rv/sP, ASI
Legatus leucophaius (Vieillot, 1818)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Myiarchus tuberculifer (d'Orbigny & Lafresnaye, 1837)	*		ExM, Rv/sP, FoI, ASI
Myiarchus swainsoni Cabanis & Heine, 1859		INTRA	ExM, Rv/sP, Rv/sNP, FoI
Myiarchus ferox (Gmelin, 1789)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Myiarchus tyrannulus (Statius Muller, 1776)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Sirystes sibilator (Vieillot, 1818)	*		ExM, Rv/sP, Rv/sNP, FoI, ASI
Rhytipterna simplex (Lichtenstein, 1823)	*		FoI, ASI
Casiornis rufus (Vieillot, 1816)	*		ExM, Rv/sP, Rv/sNP, FoI, ASI
Pitangus sulphuratus (Linnaeus, 1766)		INTRA	ExM, Rv/sP, Rv/sNP, FoI, ASI
Philohydor lictor (Lichtenstein, 1823)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Machetornis rixosa (Vieillot, 1819)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Myiodynastes maculatus (Statius Muller, 1776)		INTRA	ExM, Rv/sP, Rv/sNP, FoI, ASI
Tyrannopsis sulphurea (Spix, 1825)			FoI
Megarynchus pitangua (Linnaeus, 1766)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Myiozetetes cayanensis (Linnaeus, 1766)		INTRA	ExM, Rv/sP, Rv/sNP, FoI, ASI
Myiozetetes similis (Spix, 1825)		INTRA	ExM, Rv/sP, Rv/sNP,
Tyrannus albogularis Burmeister, 1856		INTRA	Rv/sP, Rv/sNP, FoI. ASI
Tyrannus melancholicus Vieillot, 1819		INTRA	ExM, Rv/sP, Rv/sNP, FoI, ASI
Tyrannus savana Daudin, 1802		INTRA	ExM, Rv/sP, Rv/sNP, FoI, ASI
Tyrannus tyrannus (Linnaeus, 1758)	*	INTER	Rv/sP, Rv/sNP, FoI
Griseotyrannus aurantioatrocristatus (d'Orbigny & Lafresnaye, 1837)		INTRA	ExM, Rv/sP, Rv/sNP, FoI
Empidonomus varius (Vieillot, 1818)		INTRA	ExM, Rv/sP, Rv/sNP, FoI, ASI

Taxon	Status		Evidence
	Conservation	Migration	
[*Conopias trivirgatus* (Wied, 1831)]			Rv/sP
Guyramemua affine (Burmeister, 1856)	DD (BL)		ExM, Rv/sP, FoP
Sublegatus modestus (Wied, 1831)		INTRA	ExM, Rv/sP, Rv/sNP, FoI, ASI
Colonia colonus (Vieillot, 1818)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Arundinicola leucocephala (Linnaeus, 1764)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Fluvicola albiventer (Spix, 1825)		INTRA	ExM, Rv/sP, Rv/sNP, FoI, ASI
Fluvicola nengeta (Linnaeus, 1766)			Rv/sP, FoI, ASI
Pyrocephalus rubinus (Boddaert, 1783)		INTRA	ExM, Rv/sP, Rv/sNP, FoI, ASI
Gubernetes yetapa (Vieillot, 1818)		INTRA	ExM, Rv/sP, Rv/sNP, FoI, ASI
Alectrurus tricolor (Vieillot, 1816)	VU (GL), VU (BL)	INTRA	Rv/sP, FoP, FoI
Alectrurus risora (Vieillot, 1824)	VU (GL)	INTRA	ExM, Rv/sP
Myiophobus fasciatus (Statius Muller, 1776)		INTRA	ExM, Rv/sP, Rv/sNP, FoI
Cnemotriccus fuscatus (Wied, 1831)	*		ExM, Rv/sP, Rv/sNP, FoI, ASI
Lathrotriccus euleri (Cabanis, 1868)		INTRA	ExM, Rv/sP, Rv/sNP, FoI
Empidonax alnorum Brewster, 1895		INTER	ExM, Rv/sP, FoP, FoI
Contopus cinereus (Spix, 1825)		INTRA	Rv/sP, Rv/sNP, FoI
Satrapa icterophrys (Vieillot, 1818)			ExM, Rv/sP, Rv/sNP, FoI
Hymenops perspicillatus (Gmelin, 1789)		INTRA	Rv/sP, Rv/sNP, FoI
Knipolegus lophotes Boie, 1828			FoI
Knipolegus striaticeps (d'Orbigny & Lafresnaye, 1837)	*	INTRA	ExM, Rv/sP, FoI
Knipolegus hudsoni Sclater, 1872		INTRA	ExM, Rv/sP, FoI
Xolmis irupero (Vieillot, 1823)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Xolmis velatus (Lichtenstein, 1823)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Nengetus cinereus (Vieillot, 1816)	*	INTRA	ExM, Rv/sP, Rv/sNP, FoI
Vireonidae			
Cyclarhis gujanensis (Gmelin, 1789)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Hylophilus amaurocephalus (Nordmann, 1835)			ExM, Rv/sP
Hylophilus pectoralis Sclater, 1866			ExM, Rv/sP, Rv/sNP, FoI, ASI
Vireo olivaceus (Linnaeus, 1766)		INTER	ExM, Rv/sP
Vireo chivi (Vieillot, 1817)		INTRA	ExM, Rv/sP, Rv/sNP, FoI
Corvidae			
Cyanocorax cyanomelas (Vieillot, 1818)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Cyanocorax cristatellus (Temminck, 1823)			Rv/sP, FoI
Cyanocorax chrysops (Vieillot, 1818)	*		ExM, Rv/sP, Rv/sNP, FoI, ASI
Hirundinidae			
Pygochelidon cyanoleuca (Vieillot, 1817)		INTRA	ExM, Rv/sP, Rv/sNP, FoI
Alopochelidon fucata (Temminck, 1822)		INTRA	Rv/sP, FoI
Stelgidopteryx ruficollis (Vieillot, 1817)		INTRA	ExM, Rv/sP, Rv/sNP, FoI, ASI
Progne tapera (Vieillot, 1766)		INTRA	ExM, Rv/sP, Rv/sNP, FoI, ASI
Progne subis (Linnaeus, 1758)		INTER	ExM, Rv/sP, Rv/sNP, FoI
Progne chalybea (Gmelin, 1789)	*	INTRA	ExM, Rv/sP, Rv/sNP, FoI, ASI
Progne elegans Baird, 1865		INTRA	Rv/sP, FoI, ASI
Tachycineta albiventer (Boddaert, 1783)		INTRA	ExM, Rv/sP, Rv/sNP, FoI, ASI
Tachycineta leucorrhoa (Vieillot, 1817)		INTRA	ExM, Rv/sP, Rv/sNP, FoI
Riparia riparia (Linnaeus, 1758)	*	INTER	ExM, Rv/sP, Rv/sNP, FoI
Hirundo rustica Linnaeus, 1758	*	INTER	ExM, Rv/sP, Rv/sNP, FoI
Petrochelidon pyrrhonota (Vieillot, 1817)		INTER	ExM, Rv/sP, Rv/sNP, FoI
Troglodytidae			
Troglodytes musculus Naumann, 1823			ExM, Rv/sP, Rv/sNP, FoI, ASI
Campylorhynchus turdinus (Wied, 1831)	*		ExM, Rv/sP, Rv/sNP, FoI, ASI
Pheugopedius genibarbis (Swainson, 1838)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Cantorchilus leucotis (Lafresnaye, 1845)	*		ExM, Rv/sP, Rv/sNP, FoI, ASI
Cantorchilus guarayanus (d'Orbigny & Lafresnaye, 1837)	*		ExM, Rv/sP, Rv/sNP, FoI, ASI
Polioptilidae			
Polioptila dumicola (Vieillot, 1817)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Donacobiidae			
Donacobius atricapilla (Linnaeus, 1766)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Turdidae			
Catharus fuscescens (Stephens, 1817)	*	INTER	ExM, Rv/sP, FoP, FoI
Turdus leucomelas Vieillot, 1818			ExM, Rv/sP, Rv/sNP, FoI, ASI

Taxon	Status		Evidence
	Conservation	Migration	
Turdus fumigatus Lichtenstein, 1823	*		ExM, Rv/sP
Turdus hauxwelli Lawrecen, 1869	*		ExM, Rv/sP, FoI, ASI
Turdus rufiventris Vieillot, 1818			ExM, Rv/sP, Rv/sNP, FoI, ASI
Turdus amaurochalinus Cabanis, 1850		INTRA	ExM, Rv/sP, Rv/sNP, FoI, ASI
Turdus subalaris (Seebohm, 1887)		INTRA	Rv/sP, FoP, FoI
Turdus albicollis Vieillot, 1818			ExM, Rv/sP
Mimidae			
Mimus saturninus (Lichtenstein, 1823)			ExM, Rv/sP, Rv/sNP, FoI
Mimus triurus (Vieillot, 1818)		INTRA	ExM, Rv/sP, Rv/sNP, FoI
Estrildidae			
Estrilda astrild (Linnaeus, 1758)			Rv/sP, Rv/sNP, FoI
Passeridae			
Passer domesticus (Linnaeus, 1758)			Rv/sP, Rv/sNP, FoI, ASI
Motacillidae			
Anthus chii Vieillot, 1818			ExM, Rv/sP, Rv/sNP, FoI, ASI
Fringillidae			
Spinus magellanicus (Vieillot, 1805)			ExM, Rv/sP, Rv/sNP, FoI
Euphonia chlorotica (Linnaeus, 1766)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Euphonia violacea (Linnaeus, 1758)	*		ExM, Rv/sP, FoI
Euphonia laniirostris d'Orbigny & Lafresnaye, 1837	*		ExM, Rv/sP, FoI, ASI
Passerellidae			
Ammodramus humeralis (Bosc, 1792)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Arremon taciturnus (Hermann, 1783)			Rv/sP, FoI, ASI
Arremon flavirostris Swainson, 1838			ExM, Rv/sP, Rv/sNP, FoI, ASI
Zonotrichia capensis (Statius Muller, 1776)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Icteridae			
Dolichonyx oryzivorus (Linnaeus, 1758)	*	INTER	ExM, Rv/sP, Rv/sNP, FoI
Leistes superciliaris (Bonaparte, 1850)	*	INTRA	ExM, Rv/sP, Rv/sNP, FoI
Psarocolius decumanus (Pallas, 1769)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Cacicus solitarius (Vieillot, 1816)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Cacicus chrysopterus (Vigors, 1825)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Cacicus cela (Linnaeus, 1758)	*		ExM, Rv/sP, Rv/sNP, FoI, ASI
Cacicus haemorrhous (Linnaeus, 1766)	*		Rv/sP, Rv/sNP, FoI, ASI
Icterus croconotus (Wagler, 1829)	*		ExM, Rv/sP, Rv/sNP, FoI, ASI
Icterus pyrrhopterus (Vieillot, 1819)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Molothrus rufoaxillaris Cassin, 1866			ExM, Rv/sP, Rv/sNP, FoI, ASI
Molothrus oryzivorus (Gmelin, 1788)	*		ExM, Rv/sP, Rv/sNP, FoI, ASI
Molothrus bonariensis (Gmelin, 1789)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Amblyramphus holosericeus (Scopoli, 1786)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Gnorimopsar chopi (Vieillot, 1819)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Agelaioides badius (Vieillot, 1819)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Agelasticus cyanopus (Vieillot, 1819)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Chrysomus ruficapillus (Vieillot, 1819)		INTRA	ExM, Rv/sP, Rv/sNP, FoI
Pseudoleistes guirahuro (Vieillot, 1819)			Rv/sP, FoI
Parulidae			
Geothlypis agilis (Wilson, 1812)		INTER	ExM, Rv/sP
Geothlypis aequinoctialis (Gmelin, 1789)	*		ExM, Rv/sP, Rv/sNP, FoI
Setophaga pitiayumi (Vieillot, 1817)			ExM, Rv/sP, Rv/sNP, FoI
Myiothlypis leucophrys Pelzeln, 1868			ExM, Rv/sP
Myiothlypis flaveola (Baird, 1865)	*		ExM, Rv/sP, Rv/sNP, FoI, ASI
Basileuterus culicivorus (Deppe, 1830)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Cardinalidae			
Piranga flava (Vieillot, 1822)			ExM, Rv/sP, FoI
Pheucticus aureoventris (d'Orbigny & Lafresnaye, 1837)		INTRA	ExM, Rv/sP, FoP, FoI
Amaurospiza moesta (Hartlaub, 1853)	*		ExM, Rv/sP
Cyanoloxia brissonii (Lichtenstein, 1823)			ExM, Rv/sP, FoI
Thraupidae			
Nemosia pileata (Boddaert, 1783)			ExM, Rv/sP, Rv/sNP, FoI, ASI
[*Coryphaspiza melanotis* (Temminck, 1822)]	* VU (GL), EN (BL)		Rv/sP
[*Embernagra platensis* (Gmelin, 1789)]			Rv/sP

Taxon	Status		Evidence
	Conservation	Migration	
Emberizoides herbicola (Vieillot, 1817)	*		ExM, Rv/sP, Rv/sNP, FoI
Emberizoides ypiranganus Ihering & Ihering, 1907			FoI
Porphyrospiza caerulescens (Wied, 1830)	* NT (GL)		ExM, Rv/sP
Hemithraupis guira (Linnaeus, 1766)	*		ExM, Rv/sP, Rv/sNP, FoI
Tersina viridis (Illiger, 1811)		INTRA	ExM, Rv/sP, Rv/sNP, FoI
[*Cyanerpes caeruleus* (Linnaeus, 1758)]			Rv/sP
Cyanerpes cyaneus (Linnaeus, 1766)			Rv/sP, FoI
Dacnis cayana (Linnaeus, 1766)			Rv/sP, ASI
Saltatricula atricollis Vieillot, 1817			ExM, Rv/sP, Rv/sNP, FoI, ASI
Saltatricula multicolor (Burmeister, 1860)		INTRA	Rv/sP, FoI
Saltator maximus (Statius Muller, 1776)	*		Rv/sP, FoI, ASI
Saltator coerulescens Vieillot, 1817	*		ExM, Rv/sP, Rv/sNP, FoI, ASI
Saltator similis d'Orbigny & Lafresnaye, 1837	*		ExM, Rv/sP, Rv/sNP,
Saltator aurantiirostris Vieillot, 1817			ExM, Rv/sP, Rv/sNP, FoI, ASI
Coereba flaveola (Linnaeus, 1758)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Asemospiza obscura (d'Orbigny & Lafresnaye, 1837)		INTRA	ExM, Rv/sP
Asemospiza fuliginosa (Wied, 1830)			Rv/sP, FoI
Volatinia jacarina (Linnaeus, 1766)		INTRA	ExM, Rv/sP, Rv/sNP, FoI. ASI
Eucometis penicillata (Spix, 1825)			ExM, Rv/sP, Rv/sNP, FoI, ASI
[*Trichothraupis melanops* (Vieillot, 1818)]			Rv/sP
Loriotus luctuosus (d'Orbigny & Lafresnaye, 1837)	*		FoI
Coryphospingus cucullatus (Statius Muller, 1776)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Tachyphonus rufus (Boddaert, 1783)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Tachyphonus coronatus (Vieillot, 1822)			ExM, Rv/sP
Ramphocelus carbo (Pallas, 1764)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Sporophila lineola (Linnaeus, 1758)		INTRA	ExM, Rv/sP, Rv/sNP, FoI, ASI
Sporophila plumbea (Wied, 1830)		INTRA	Rv/sP, Rv/sNP, FoI
Sporophila collaris (Boddaert, 1783)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Sporophila nigricollis (Vieillot, 1823)		INTRA	Rv/sP, Rv/sNP, FoI
Sporophila caerulescens (Vieillot, 1823)		INTRA	ExM, Rv/sP, Rv/sNP, FoI
Sporophila leucoptera (Vieillot, 1817)		INTRA	ExM, Rv/sP, Rv/sNP, FoI, ASI
Sporophila nigrorufa (d'Orbigny & Lafresnaye, 1837)	* VU (GL), VU (BL)	INTRA	ExM, Rv/sP, FoP
Sporophila bouvreuil (Statius Muller, 1776)	*	INTRA	Rv/sP, FoI
Sporophila pileata (Sclater, 1865)	* NT (BL)	INTRA	ExM, Rv/sP, FoI
Sporophila hypoxantha Cabanis, 1851	VU (BL)	INTRA	ExM, Rv/sP, Rv/sNP, FoI, ASI
Sporophila ruficollis Cabanis, 1851	* NT (GL), VU (BL)	INTRA	Rv/sP, Rv/sNP, FoP, FoI
Sporophila iberaensis Di Giacomo & Kopuchian, 2016	* EN (GL)	INTRA	FoI
Sporophila palustris (Barrows, 1883)	* EN (GL), VU (BL)	INTRA	Rv/sP, FoI
Sporophila hypochroma Todd, 1915	* NT (GL)	INTRA	Rv/sP, FoI
Sporophila cinnamomea (Lafresnaye, 1839)	* VU (GL), NR (BL)	INTRA	Rv/sP, Rv/sNP, FoI
Sporophila angolensis (Linnaeus, 1766)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Sporophila maximiliani (Cabanis, 1851)	* EN (GL), CR (BL)	INTRA	Rv/sP
Thlypopsis sordida (d'Orbigny & Lafresnaye, 1837)		INTRA	ExM, Rv/sP, Rv/sNP, FoI
Cypsnagra hirundinacea (Lesson, 1831)			ExM, Rv/sP, FoP, FoI, ASI
Microspingus melanoleucus (d'Orbigny & Lafresnaye, 1837)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Microspingus cinereus Bonaparte, 1850			ExM
Conirostrum speciosum (Temminck, 1824)	*		ExM, Rv/sP, Rv/sNP, FoI, ASI
Sicalis citrina Pelzeln, 1870		INTRA	Rv/sP, FoI
Sicalis flaveola (Linnaeus, 1766)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Sicalis luteola (Sparrman, 1789)		INTRA	ExM, Rv/sP, Rv/sNP, FoI
Pipraeidea melanonota (Vieillot, 1819)			Rv/sP, FoI
Neothraupis fasciata (Lichtenstein, 1823)	* NT (GL)		ExM, Rv/sP
Cissopis leverianus (Gmelin, 1788)	* NT (GL)		Rv/sP, FoI
Schistochlamys melanopis (Latham, 1790)			ExM, Rv/sP, FoP, FoI
[*Schistochlamys ruficapillus* (Vieillot, 1817)]			Rv/sP
Paroaria coronata (Miller, 1776)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Paroaria capitata (d'Orbigny & Lafresnaye, 1837)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Thraupis sayaca (Linnaeus, 1766)			ExM, Rv/sP, Rv/sNP, FoI, ASI
Thraupis palmarum (Wied, 1821)			ExM, Rv/sP, Rv/sNP, FoI
Stilpnia cayana (Linnaeus, 1766)			ExM, Rv/sP, Rv/sNP,
Tangara mexicana (Linnaeus, 1766)	*		FoI

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

Taxon	Citation source / Reason for exclusion
Crypturellus soui (Hermann, 1783)	Donatelli (2005) / A
Nothura boraquira (Spix, 1825)	Straube *et al.* (2006a), Benites *et al.* (2017) / A
Spatula cyanoptera (Vieillot, 1816)	Nunes *et al.* (2008) / C
Mareca sibilatrix (Poeppig, 1829)	Nunes (2011a) / A
Penelope obscura Temminck, 1815	Aguirre & Aldrighi (1983), Souza (2005), Cintra (2014) / C
Odontophorus capueira (Spix, 1825)	Cintra (2014) / D
Patagioenas plumbea (Vieillot, 1818)	Leuzinger (2011) / B
Piaya melanogaster (Vieillot, 1817)	Nunes (2010) / A
Hydropsalis climacocerca (Tschudi, 1844)	Aguirre & Aldrighi (1983), Cintra (2014) / A
Hydropsalis forcipata (Nitzsch, 1840)	Nunes (2011a) / C
Florisuga fusca (Vieillot, 1817)	Nunes & Tomas (2004b) / C
Anopetia gounellei (Boucard, 1891)	Naumburg *et al.* (1930) / C
Phaethornis eurynome (Lesson, 1832)	Araújo (2001), Tubelis & Tomas (2003a), Nunes *et al.* (2009), Cintra (2014) / C
Thalurania glaucopis (Gmelin, 1788)	Tubelis & Tomas (2003a) / A
Taphrospilus hypostictus (Gould, 1862)	Sick (1997) / C
Elliotomyia chionogaster (Tschudi, 1845)	Lopes *et al.* (2016) / A
Opisthocomus hoazin (Statius Muller, 1776)	Brown-Jr. (1986) / A
Tigrisoma fasciatum (Such, 1825)	Nunes (2010) / B
Geranoaetus polyosoma (Quoy & Gaimard, 1824)	Reichholf (1976) / A
Glaucidium minutissimum (Wied, 1830):	Pinho (2005) / A
Trogon viridis Linnaeus, 1766	Cintra (2014) / D
Trogon surrucura Vieillot, 1817	Tubelis & Tomas (2003a), Pinho (2005), Nunes *et al.* (2009), Nunes (2010) / A
Trogon collaris Vieillot, 1817	Cintra (2014) / D
Ramphastos tucanus Linnaeus 1758	Pivatto *et al.* (2008) / C
Selenidera maculirostris (Lichtenstein, 1823)	Tubelis & Tomas (2003a), Cintra (2014) / C
Veniliornis spilogaster (Wagler, 1827)	Leuzinger (2011) / A
Campephilus robustus (Lichtenstein, 1818)	Cintra (2014) / D
Piculus leucolaemus (Natterer & Malherbe, 1845)	Lopes *et al.* (2016) / A
Piculus aurulentus (Temminck, 1821)	Schubart *et al.* (1965), Cintra (2014) / A
Anodorhynchus glaucus (Vieillot, 1816)	Collar *et al.* (1992) / A
Myrmophylax atrothorax (Boddaert, 1783)	Pinto (1938), Cintra (2014) / D
Myrmotherula axillaris (Vieillot, 1817)	Cintra (2014) / D
Myrmotherula menetriesii (d'Orbigny, 1837)	Tubelis & Tomas (2003a), Cintra (2014) / A
Thamnophilus torquatus Swainson, 1825	Donatelli (2005), Brandão *et al.* (2011) / C
Thamnophilus punctatus (Shaw, 1809)	Nunes (2010), Brandão *et al.* (2011), Leuzinger (2011) / B
Pyriglena leucoptera (Vieillot, 1818)	Travassos & Freitas (1940), Leuzinger (2011) / C
Hypocnemis ochrogyna Zimmer, 1932	Cintra (2014) / D
Willisornis poecilinotus (Cabanis, 1847)	Cintra (2014) / D
Xiphocolaptes albicollis (Vieillot, 1818)	Leuzinger (2011), Cintra (2014) / A
Xiphorhynchus fuscus (Vieillot, 1818)	Donatelli (2005) / C
Lepidocolaptes albolineatus (Lafresnaye, 1845)	Tubelis & Tomas (2003a) / A
Lochmias nematura (Lichtenstein, 1823)	Leuzinger (2011) / B
Anabacerthia lichtensteini (Cabanis & Heine, 1859)	Leuzinger (2011) / A
Syndactyla dimidiata (Pelzeln, 1859)	Brown-Jr. (1986), Tubelis & Tomas (2003a), Leuzinger (2011), Cintra (2014) / A
Automolus leucophthalmus (Wied, 1821)	Nunes *et al.* (2008) / C
Synallaxis gujanensis (Gmelin, 1789)	Cintra (2014) / D
Schiffornis virescens (Lafresnaye, 1838)	Leuzinger (2011) / A
Schiffornis turdina (Wied, 1831)	Lopes *et al.* (2016) / A
Neopipo cinnamomea (Lawrence, 1869)	Donatelli *et al.* (2014) / C
Poecilotriccus plumbeiceps (Lafresnaye, 1846)	Nunes *et al.* (2010), Cintra (2014) / D
Myiornis auricularis (Vieillot, 1818)	Nunes *et al.* (2008) / C
Myiopagis flavivertex (Sclater, 1887)	Schubart *et al.* (1965), Tubelis & Tomas (2003a) / A
Ramphotrigon ruficauda (Spix, 1825)	Cintra (2014) / D
Fluvicola pica (Boddaert, 1783)	Nunes (2010), Leuzinger (2011) / A
Leistes militaris (Linnaeus, 1758)	Brandão *et al.* (2011) / A
Icterus jamacaii (Gmelin, 1788)	Pinho (2005) / A
Agelasticus thilius (Molina, 1782)	Nunes (2011a) / A
Charitospiza eucosma Oberholser, 1905	Leuzinger (2011), Lopes *et al.* (2016) / B

Taxon	Citation source / Reason for exclusion
Lanio nattereri (Pelzeln, 1870)	Tubelis & Tomas (2003a), Cintra (2014) / C
Sporophila bouvronides (Lesson, 1831)	Pinho (2005) / A
Sporophila minuta (Linnaeus 1758)	Nunes *et al.* (2009) / C
Sporophila melanogaster (Pelzeln, 1870)	Silveira & Straube (2008) / A
Rauenia bonariensis (Gmelin, 1789)	Nunes *et al.* (2010) / A

Reason – Reason for exclusion (adapted from Pacheco *et al.,* 2021): (A) The records for Pantanal with known authorship (documentation non-existent or not informed) are inconsistent with the species' distributional and dispersal patterns; (B) Occurrence in Pantanal either wrong, possibly non-existent or speculative. Species with marginal distribution in the Pantanal, but without evidence of occurrence in floodplain; (C) Occurrence in Pantanal either wrong, possibly non-existent or speculative. The species is listed to Pantanal; nonetheless, data on any particular record is unknown or invalid; (D) Occurrence in Pantanal either wrong, possibly non-existent or speculative. Published range map shows it in Pantanal; nonetheless, data on any particular record is unknown or invalid.

tory, 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 (Gimenes *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, Paiaguás, 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 phytogeographic 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 culicivorus* 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 *Saltatricula 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, Nystalus striatipectus, Melanerpes cactorum, Celeus lugubris, Xiphocolaptes major, Paroaria coronata,* and *Microspingus 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, *Tinamus tao, Pauxi tuberosa, Helicolestes hamatus, Megascops usta, Trogon melanurus, Pteroglossus inscriptus, Pteroglossus bitorquatus, Campephilus rubricollis,* 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 bahamensis, Spatula platalea, Netta peposaca,* and *Oxyura vittata*) 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 *Pheucticus aureoventris* 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 km^2 in western Nhecolândia (Gräbin *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 (Berlinck *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.

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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′O	Tubelis & Tomas (2003a), Vasconcelos *et al.* (2008)
APA Baía Negra	19°01′S, 57°31′O	This study (GOF & RADS, 2018 and 2019)
Aquidauana	20°29′S, 55°48′O	Tubelis & Tomas (2003a), Whittaker *et al.* (2008)
Área próxima ao Rio Vermelho	19°36′S, 56°51′O	Tubelis & Tomas (2003a)
Área urbana de Porto Murtinho	21°41′S, 57°52′O	Benites *et al.* (2017)
Assentamento Laranjeiras	16°34′S, 57°32′O	Vitorino *et al.* (2017), this study (BDV & AVBF, 2016)
Baía do Malheiros	16°03′S, 57°41′O	Nunes (2010), this study (AVBF & BDV, January 2019 and January 2020)
Baía do Retiro Velho	16°10′S, 57°46′O	Nunes (2010)
Baía Boca do Natalino	16°30′S, 57°47′O	Nunes (2010)
Baía da Guaíva	16°39′S, 57°10′O	Tubelis & Tomas (2003a)
Baía do Morro	16°42′S, 57°46′O	Nunes (2010)
Baía Negra	16°48′S, 57°39′O	Kantek & Onuma (2013)
Baía Simão Nunes	16°19′S, 57°44′O	Nunes (2010)
Base de Estudos do Pantanal	19°34′S, 57°01′O	This study (SRP & RRL, 2011 and 2020)
Base do IBAMA, Transpantaneira	17°12′S, 57°00′O	Tubelis & Tomas (2003a)
Boca de Hormiguera	19°03′S, 57°19′O	Tubelis & Tomas (2003a)
Cáceres	16°08′S, 57°43′O	Tubelis & Tomas (2003a), Lopes *et al.* (2016), WikiAves (2021)
Caiçara	16°04′S, 57°45′O	Tubelis & Tomas (2003a), Lopes *et al.* (2016)
Flood área in BR-262	19°34′S, 57°10′O	This study (APN, July 2011)
Cambará	16°33′S, 57°51′O	Lopes *et al.* (2016)
Campo Florido	21°39′S, 57°43′O	This study (December 2013 and February 2014)
Campus da UFMS/Corumbá	18°59′S, 57°37′O	Nunes *et al.* (2011)
Carandazal/MS-325	19°43′S, 57°04′O	This study (November 2011)
Carandazinho	18°39′S, 57°32′O	Tubelis & Tomas (2003a)
Centro de Pesquisa da Vida Selvagem do Pantanal	16°07′S, 56°59′O	WikiAves (2021)
Chácara Aromita	21°42′S, 57°51′O	Benites & Mamede (2021), this study (MB & SM, 2020)
Chácara Brasília	21°42′S, 57°50′O	Benites & Mamede (2021), this study (MB & SM, 2020)
Corumbá	18°59′S, 57°38′O	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′O	Nunes *et al.* (2010), Serrano (2010), WikiAves (2021)
Descalvados/Fedegoso	16°43′S, 57°45′O	Tubelis & Tomas (2003a), Lopes *et al.* (2016)
Military base of Porto Murtinho	21°05′S, 57°50′O	This study (APN, November 2011)
Dique de contenção de inundação e área rural de Porto Murtinho	21°41′S, 57°52′O	Benites *et al.* (2017), Benites & Mamede (2021)
Estação Barranco Branco	21°05′S, 57°50′O	Benites *et al.* (2017)
Estação Ecológica de Taiamã	16°52′S, 57°280′O	Lopes *et al.* (2016), Frota *et al.* (2020a)
Estação Ingazeira	22°04′S, 57°56′O	Benites *et al.* (2017), Benites & Mamede (2021)
Fazenda Acurizal	17°49′S, 57°32′O	Allen (1891), Benites & Mamede (2021), this study (FCS, June 2003; SRP & RRL, September 2014)
Fazenda Aguapé	20°06′S, 55°57′O	Tubelis & Tomas (2003a), WikiAves (2021), Xeno-Canto (2021)
Fazenda Alegria	19°03′S, 56°47′O	Tubelis & Tomas (2003a), Nunes *et al.* (2009), Nunes (2015)
Fazenda Alvorada	17°16′S, 56°15′O	This study (WMT, 2007)
Fazenda Baía, Pixaim	16°40′S, 56°48′O	Tubelis & Tomas (2003a)
Fazenda Baía Bonita	18°40′S, 56°26′O	Tubelis & Tomas (2003a)
Fazenda Baía das Pedras	19°15′S, 55°46′O	This study (RJD, November 2007)
Fazenda Baía de Pedra	16°28′S, 58°08′O	Lopes *et al.* (2016)
Fazenda Baía Grande	20°20′S, 56°15′O	WikiAves (2021)
Fazenda Barra Mansa	19°35′S, 56°05′O	Tubelis & Tomas (2003a)
Fazenda Barranco Alto/Salina	19°35′S, 56°09′O	Tubelis & Tomas (2003a), Leuzinger (2011)
Fazenda Barranco Branco	21°05′S, 57°50′O	This study (APN, November 2011)
Fazenda Bela Vista	19°14′S, 57°26′O	Nunes *et al.* (2008, 2010)
Fazenda Braunal	22°06′S, 57°44′O	Straube *et al.* (2006a), this study (APN, November 2011)
Fazenda Caiman	19°56′S, 56°20′O	Tubelis & Tomas (2003a), Nunes (2011a), Straube & Melo (2011), WikiAves (2021), Xeno-Canto (2021)
Fazenda Caité	18°43′S, 55°15′O	Nunes *et al.* (2008), this study (APN, May 2005)
Fazenda Campo Lourdes	19°32′S, 55°38′O	This study (JRD, July 2007)
Fazenda Campo Novo	19°22′S, 57°37′O	Nunes *et al.* (2008)
Fazenda Cerro Porã	22°01′S, 57°31′O	Benites *et al.* (2017)

Localities	Coordinates	Reference
Pousada das Araras	16°30′S, 56°42′O	Xeno-Canto (2021), WikiAves (2021)
Fazenda Fazendinha	19°29′S, 56°29′O	Tubelis & Tomas (2003a)
Fazenda Figueirinha	19°15′S, 57°40′O	Vasconcelos *et al.* (2008)
Fazenda Firme/Fazenda Leque	19°15′S, 57°01′O	Tubelis & Tomas, 2003a), Serrano (2010), WikiAves (2021)
Fazenda Jofre, Transpantaneira	17°17′S, 56°50′O	Tubelis & Tomas (2003a)
Fazenda Lucero Porã	21°54′S, 57°38′O	This study (APN, November 2011)
Fazenda Monjolo	19°19′S, 57°34′O	Vasconcelos *et al.* (2008)
Fazenda Novos Dourados/RPPN Engenheiro Eliezer Batista	18°05′S, 57°28′O	This study (APN, January and June 2007; RRL, September 2012 and September 2013)
Fazenda Nhumirim	18°59′S, 56°39′O	Tubelis & Tomas (1999, 2003a), Chiaravalloti *et al.* (2009), Nunes *et al.* (2009), Nunes (2015)
Fazenda Nova Esperança	17°54′S, 56°47′O	WikiAves (2021)
Fazenda Pacu	20°38′S, 57°37′O	Straube *et al.* (2006b)
Fazenda Palmeiras/Palmira	18°55′S, 57°03′O	Tubelis & Tomas (2003a)
Fazenda Porto Conceição	20°28′S, 57°55′O	Straube *et al.* (2006a)
Fazenda Paraputanga	15°56′S, 57°40′O	Lopes *et al.* (2016)
Fazenda Piraputanga	16°28′S, 56°08′O	Tubelis & Tomas (2003a)
Fazenda Pouso Alegre	16°30′S, 56°44′O	Nunes (2011a), Xeno-Canto (2021), WikiAves (2021)
Fazenda Quebracho/Porto Quebracho	21°50′S, 57°53′O	Tubelis & Tomas (2003a), Straube *et al.* (2006a), this study (APN, November 2011)
Fazenda Rabicho	18°59′S, 57°37′O	Tubelis & Tomas (2003a)
Fazenda Rancharia	18°34′S, 55°50′O	This study (WMT, 2007)
Fazenda Retirinho	19°59′S, 56°02′O	Tubelis & Tomas (2003a), this study (APN, August 2011)
Fazenda Rio Alegre	17°08′S, 56°53′O	Tubelis & Tomas, (2003a)
Fazenda Rio Claro	16°37′S, 56°44′O	Tubelis & Tomas (2003a)
Fazenda Rio Negro	19°30′S, 56°17′O	Tubelis & Tomas, 2003a), Donatelli (2005), Cestari (2006a, b), Donatelli *et al.* (2014, 2017)
Fazenda San Francisco	20°05′S, 56°36′O	Melo *et al.* (2007), Melo & Teribeli (2008), WikiAves (2021), this study (AVM, 2005)
Fazenda Santa Cruz	17°04′S, 56°54′O	Tubelis & Tomas (2003a)
Fazenda Santa Emília	19°30′S, 55°33′O	Pivatto *et al.* (2008)
Fazenda Santa Inês	16°30′S, 56°45′O	Tubelis & Tomas (2003a)
Fazenda Santa Isabel	17°10′S, 57°01′O	Tubelis & Tomas (2003a)
Fazenda Santa Lúcia	21°02′S, 57°44′O	This study (APN, November 2011)
Fazenda Santa Teresa/Pixaim	16°45′S, 56°52′O	Xeno-Canto (2021), WikiAves (2021)
Fazenda Santa Vergínia	22°01′S, 57°54′O	This study (APN, November 2011)
Fazenda Santana	19°37′S, 55°36′O	Nunes *et al.* (2008), this study (APN, September 2005 and January 2016)
Fazenda Santana do Paiaguás	18°03′S, 56°31′O	This study (WMT, 2007)
Fazenda Santo Antônio das Lendas	16°39′S, 57°50′O	Tubelis & Tomas (2003a), Lopes *et al.* (2016)
Fazenda Santo Expedito	19°06′S, 56°43′O	Nunes (2015)
Fazenda São Bento	19°29′S, 56°59′O	Araújo (2001), Yabe *et al.* (2010), Severo-Neto *et al.* (2015), this study (RRL, since 2010)
Fazenda São Francisco	16°54′S, 56°15′O	WikiAves (2021)
Fazenda São Francisco do Paiaguás	17°46′S, 55°37′O	This study (WMT, 2007)
Fazenda São Francisco do Tereré	21°19′S, 57°50′O	Naumburg (1935)
Fazenda São João	16°56′S, 56°37′O	Tubelis & Tomas (2003a)
Fazenda São José do Piquiri	17°14′S, 56°34′O	Tubelis & Tomas (2003a)
Fazenda São Luis	18°09′S, 57°01′O	Nunes (2011b)
Fazenda São Pedro	16°22′S, 56°22′O	Tubelis & Tomas (2003a)
Fazenda São Roque	19°10′S, 56°42′O	This study (RRL, September 2017)
Fazenda Taboco	22°04′S, 55°38′O	This study (APN, September 2005 and January 2006)
Fazenda Tarumã	19°05′S, 57°06′O	Tubelis & Tomas (2003a)
Fazenda Tarumã do Nabileque	20°17′S, 57°38′O	Straube *et al.* (2006b)
Fazenda Tereré	21°25′S, 57°48′O	This study (APN, November 2011)
Fazenda Terra Preta	20°24′S, 57°21′O	Straube *et al.* (2006b)
Firme	21°12′S, 57°26′O	Straube *et al.* (2006b)
Forte Coimbra	19°55′S, 57°47′O	Tubelis & Tomas (2003a)
Foz do Rio Apa	22°05′S, 57°59′O	Straube *et al.* (2006a)
Foz do Rio Jauru/Cáceres	16°20′S, 57°46′O	WikiAves (2021)
Hotel Porto Jofre	17 21°S, 56°46′O	WikiAves (2021)
Ilha do Nabileque	20°22′S, 57°44′O	This study (APN, November 2011)
Ilha dos Bugres/Passo do Bugre	19°47′S, 57°39′O	Tubelis & Tomas (2003a)
Joselândia	16°32′S, 56°09′O	WikiAves (2021)
Lagoa de Chacororé	16°02′S, 57°43′O	Lopes *et al.* (2016)
Margem do Rio Paraguai	21°42′S, 57°54′O	Benites *et al.* (2017)

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 Pão de Açúcar	21°26′S, 57°53′O	Tubelis & Tomas (2003a), this study (APN & WMT, November 2011)
Paiaguás	18°11′S, 55°33′O	This study (WMT, 2007)
Pantanal do Abobral	19°27′S, 57°03′O	Tubelis & Tomas (2003a)
Paratudal	19°35′S, 57°02′O	Amaral & Ragusa-Netto (2008)
Parque de exposições, Poconé	16°19′S, 56°32′O	Tubelis & Tomas (2003a)
Parque Estadual Encontro das Águas	17°07′S, 56°41′O	WikiAves (2021)
PARNA Pantanal Matogrossense	17°51′S, 57°25′O	Jesus & Silva (2003), WikiAves (2021)
Passo do Lontra	19°34′S, 57°02′O	Tubelis & Tomas (2003a), Nunes *et al.* (2010), Xeno-Canto (2021), WikiAves (2021)
Pirizal	16°14′S, 56°23′O	Pinho (2005), Signor & Pinho (2010), Evangelista *et al.* (2010)
Poconé	16°15′S, 56°37′O	Tubelis & Tomas (2003a), this study (RSM, 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 (APN, November 2011)
Porto Conceição	17°08′S, 57°21′O	Lopes *et al.* (2016)
Porto Cercado	16°30′S, 56°22′O	Tubelis & Tomas (2003a)
Porto da Fazenda	16°27′S, 57°07′O	Tubelis & Tomas (2003a)
Porto da Manga	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°26′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)
Posto do IBAMA, Transpantaneira	16°21′S, 56°38′O	Tubelis & Tomas (2003a)
Pousada Pantaneiro	16°56′S, 56°53′O	Xeno-Canto (2021)
Pousada Pequi	20°11′S, 55°55′O	WikiAves (2021)
Pousada Piuval	16°23′S, 56°35′O	Emanuel (2013), Xeno-Canto (2021), this study (DMMO & BC, 2010 to 2019)
Pousada Refúgio da Ilha	20°13′S, 56°34′O	Ribas *et al.* (2011), WikiAves (2021)
Pousada Rio Mutum	16°20′S, 55°51′O	WikiAves (2021)
Pousada Xaraés	19°29′S, 56°57′O	Nunes *et al.* (2010)
Reserva Kadiwéu	20°39′S, 57°29′O	Straube *et al.* (2006a), this study (APN, November 2011)
Retiro Carandá	21°47′S, 57°34′O	WikiAves (2021)
Retiro Novo	16°22′S, 56°18′O	Vasconcelos *et al.* (2008), Nabuco *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 Piquiri	17°56′S, 56°12′O	This study (WMT, 2007)
Rio São Lourenço/Cuiabá	17°29′S, 56°52′O	Tubelis & Tomas (2003a)
Rio Tarumã	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-267/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°36′S, 56°59′O	Xeno-Canto (2021)
Transpantaneira (stretch between Rio Bento Gomes and Pixaim)	16°35′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)

Acronyms of authors in alphabetical order: Alessandro Pacheco Nunes (APN), Alyson Vieira de Melo (AVM), Angélica Vilas Boas da Frota (AVBF), Breno Dias Vitorino (BDV), Carlos Braulio (CB), Dalci Maurício Miranda de Oliveira (DMMO), Fernando Costa Straube (FCS), Gabriel Oliveira de Freitas (GOF), Maria Antonietta Castro Pivatto (MACP), Maristela Benites (MB), Rafael Augusto Ducel de Souza (RADS), Reginaldo José Donatelli (RJD), Renato Soares Moreira (RSM), Rudi Ricardo Laps (RRL), Simome Mamede (SM), Sérgio Roberto Posso (SRP) and Walfrido Moraes Tomas (WMT).

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 Corumbá)	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	Tubelis & Tomas (2003a), Serrano (2010)
Nordeste do Pantanal	Tubelis & Tomas (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	Tubelis & Tomas (2003a)
Rio São Lourenço e Cuiabá	Tubelis & Tomas (2003a)
Rio Taquari	Tubelis & Tomas (2003a)
Rio Verde de Mato Grosso	WikiAves (2021)
Rodovia Transpantaneira	WikiAves (2021)
Rodovia Transpantaneira (between Poconé and Porto Jofre)	Tubelis & Tomas (2003a)
Salinas do Rio Negro	Serrano (2010)
Santo Antônio do Leverger	WikiAves (2021)

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