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Avifauna of São Camilo State Park: the importance of this semideciduous seasonal forest fragment for bird conservation

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Abstract - The São Camilo State Park is a protected area of an important remnant of Semideciduous Seasonal Forest in western Paraná, a region highly threatened by deforestation. Although conservation areas such as the São Camilo State Park are important for preserving biodiversity, knowledge about the local avifauna is limited, with the only available study conducted 17 years ago. Thus, this study presents an inventory of the avifauna of the São Camilo State Park through point counts, mist nets, naturalistic observations, and citizen science data. We recorded 222 birds species (25 Orders and 56 Families), representing approximately 29% of the bird fauna of Paraná state. Five regionally threatened species were found in the area. Twelve species are endemic to the Atlantic Forest, nine are classified as migratory, and 26 are partially migratory, 21 taxa are forest-dependent, while 83 are semi-dependent. There is a predominance of insectivorous, omnivorous, and frugivorous birds. A total of 179 species were added to the original species list of the area. Our results highlight the importance of the São Camilo State Park for the conservation of birds in the Semideciduous Seasonal Forest in western Paraná.

Keywords: Biodiversity. Atlantic Forest. Ornithology. Ornithological Inventory.

Avifauna do Parque Estadual de São Camilo: a importância deste fragmento de floresta estacional semidecidual para a conservação de aves

Resumo - O Parque Estadual de São Camilo é uma unidade de conservação que protege um importante remanescente de Floresta Estacional Semidecidual no oeste paranaense, uma região altamente ameaçada pelo desmatamento. Embora áreas de conservação, como o Parque Estadual de São Camilo, sejam importantes para a preservação da biodiversidade, o conhecimento sobre a avifauna local é limitado,

pois o único estudo disponível foi realizado há 17 anos. Dessa forma, foi realizado um inventário da avifauna do Parque Estadual de São Camilo através de pontos de contagem, rede-de-neblina, observações naturalísticas e dados de ciência cidadã. Registramos no parque 222 espécies de aves (25 Ordens e 56 Famílias) representando aproximadamente 29% da avifauna paranaense. Cinco espécies regionalmente ameaçadas de extinção foram encontradas na área. Doze espécies são endêmicas da Mata Atlântica, nove são classificadas como migratórias e 26 parcialmente migratórias, 21 táxons são dependentes de florestas, enquanto que 83 são semi-dependentes. Houve um predomínio de aves insetívoras, onívoras e frugívoras. Um total de 179 espécies foram adicionadas a lista original de espécies da área. Nossos resultados destacam a importância do Parque Estadual de São Camilo para a conservação de aves em Floresta Estacional Semidecidual no oeste paranaense.

Palavras-chave: Biodiversidade. Mata Atlântica. Ornitologia. Inventário Ornitológico.

Avifauna en el Parque Estatal São Camilo: la importancia de este bosque estacional semidecíduo para la conservación de las aves

Resumen - El Parque Estatal de São Camilo protege una importante área de Bosque Estacional Semideciduo en el oeste de Paraná, una zona altamente amenazada por la deforestación. Aunque las áreas de conservación como el Parque Estatal de São Camilo son importantes para preservar la biodiversidad, el conocimiento sobre la avifauna local de esta unidad de conservación es limitado debido a que el último estudio se realizó hace 17 años. Este estudio reciente llevó a cabo un inventario de la avifauna del parque mediante puntos de conteo, redes de niebla, observaciones naturalistas y datos de ciencia ciudadana. Se encontraron 222 especies de aves en el parque, lo que representa alrededor del 29% de la fauna de aves del estado de Paraná. Cinco especies amenazadas a nivel regional fueron detectadas en el área. Además, 12 especies son endémicas del Bosque Atlántico, mientras que 9 están clasificadas como migratorias y 26 como parcialmente migratorias. Un total de 179 especies fueron agregadas a la lista original de especies del área. Se destaca la importancia del Parque Estatal de São Camilo para la conservación de la avifauna y la biodiversidad en el Bosque Estacional Semideciduo en el oeste de Paraná.

Palabras clave: Biodiversidad. Bosque Atlántico. Ornitología. Inventario Ornitológico.

Introduction

The Atlantic Forest is a global biodiversity hotspot, highly threatened by deforestation and degradation for over 500 years (ICMBio 2018; Lima et al. 2020; Martins et al. 2021). The loss of its original vegetation is up to 89% and the remnants are characterized by small, isolated and altered fragments (Jenkins et al. 2015; ICMBio 2018; SOS Mata Atlântica 2021; Wilson et al. 2021). Threats and biodiversity losses are particularly prominent at the subtropical southern limit of the Atlantic Forest, its most heterogeneous part, comprising the Dense Ombrophilous Forest, the Araucaria Mixed

Forest, Campos grasslands, Cloud Forest and the Semideciduous Seasonal Forest (Neves et al. 2017; Torezan et al. 2020; Wilson et al. 2021). Paraná State, southern Brazil, holds all these heterogeneity of Atlantic Forest formations and, that on the beginning of the last century had a forest cover with over 80% and now reduced to approximately 5% (Estevan et al. 2016). Between 2020 and 2021, the state was considered the third most deforested within the Atlantic Forest in Brazil with about 3,299 hectares lost, and in the first half of 2022, another 1,607 hectares of forest were cut down, showing that deforestation is an ongoing issue (SOS Mata Atlântica 2022; Sistema de Alertas de Desmatamento 2022).

The Semideciduous Seasonal Forest in particular has suffered the greatest reduction in it natural area. The agricultural expansion in the western Paraná, mainly occurring in the 1960s, caused the State to lose approximately 240,000 hectares of forests per year. This expansion only came to an end in the 1970s, however, deforestation continued and a large part of the original areas were lost (Gubbert-Filho 1998). Thus, the northern and western regions of, Paraná State, originally covered by Semideciduous Forest, are now characterized by fields of intensive grain agriculture, such as corn and soybean monocultures with few conservation areas and a growing fragmentation of unprotected areas (Lisboa et al. 2019; Kozera et al. 2020; Bald et al. 2021; SOS Mata Atlântica 2022).

Small conservation areas are important to maintain biodiversity. They provide habitat and resources to animals species and ensure the maintenance of critical ecosystem services and contributing to the quality of life, human health and well-being (Kramer et al. 2020; Hegetschweiler et al. 2022; Riva and Fahrig 2022). In fragmented areas such as western Paraná State, small conservation areas may play an important role in improving landscape connectivity and reducing habitat isolation (Barbosa et al. 2017; Wintle et al. 2019). Some animal species are more sensitive to the effects of fragmentation, becoming more susceptible to changes in the environments and being more prone to local extinctions. Despite being highly mobile, many birds species exhibit unique habits and behaviours that make them unable to overcome anthropogenic barriers, such as agricultural matrices or pastures, further increasing their sensitivity to fragmentation and disturbances (Biz et al. 2017; Boesing et al. 2018; Cabral et al. 2021).

Forest fragmentation processes have a significant impact on the ecological dynamics of animal species, particularly in the bird community. However, the presence of diverse bird species in fragmented areas can play crucial roles in local ecology since these animals can act as predators, pollinators, scavengers, seed dispersers, ecosystem engineers, and by connecting habitats (Michel et al. 2020). Thus, understanding the assemblages of birds in protected fragmented areas can aid in conservation, management, and restoration efforts (Zimmerman et al. 2020; Cardoso et al. 2022). Moreover, comprehending the ecological aspects of bird communities from a functional ecology perspective can help identify patterns that affect them (Rosenfield and Müller 2020).

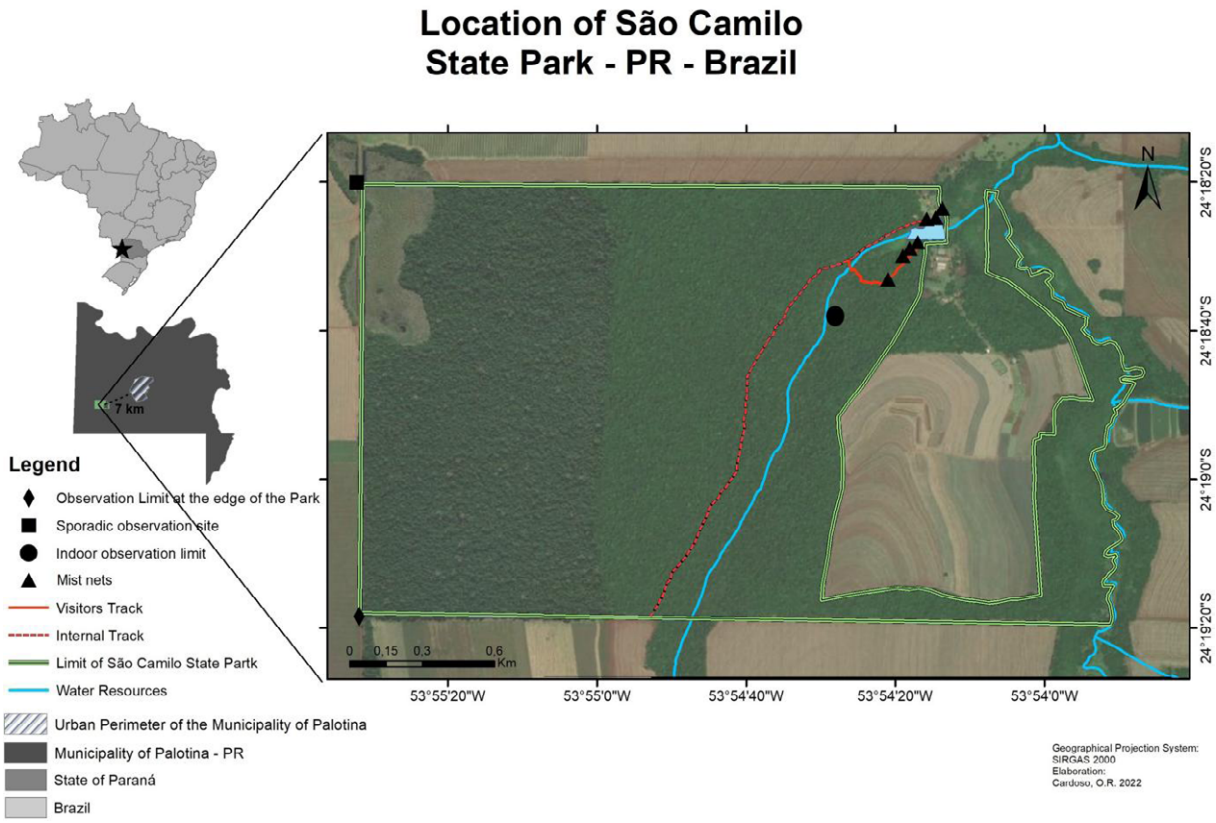
Currently, the Semideciduous Seasonal Forest in Paraná State has been reduced to less than 4% of its original pristine cover (Dettke et al. 2018). This forest has been drastically modified into vast agricultural land due to political incentives to occupy western Paraná State, known for its high productivity soil. Consequently, only a few secondary forest remnants remain (Straube and Urben-Filho 2002). Given the importance of surveying forest fragments in western Paraná and the limited ecological information available on the avifauna in the area, this study aimed to characterize and conduct a new bird inventory at São Camilo State Park, one of the largest remaining forests in the region. The main objective was to determine the significance of this area for the conservation of the avifauna in western Paraná.

Material and methods

Study Site

This study was conducted at São Camilo State Park (henceforth also referred as "São Camilo"), municipality of Palotina, western Paraná State, south Brazil (24°18'20" S and 53°54'15" W). São Camilo is responsible for protecting 385.34 hectares of Semideciduous Seasonal Forest (Figure 1), covering about 0.6% of Palotina municipality, and is considered one of the few remaining forests in the region.

Figure 1. Map of the state of Paraná (Southern Brazil) showing the São Camilo State Park area in Palotina, the locations of the mist-netting stations (triangle), the observation point boundaries on the edge and interior of the park (losangle and circle, respectively) and the northwest region of the park occasionally visited (square).



The climate of the region is subtropical humid (Köppen classification, CFA), with average temperatures below 18ºC during the coldest months (June to August) and above 22ºC in the warmest months (October to February) (Batista and Aranha 2017; Ribas et al. 2020). Annual precipitation ranges from 1600 mm to 2000 mm, with the majority of rainfall occurring during the summer months (Alvares et al. 2013). It is worth noting that some trees in the region undergo defoliation during the dry season (Toscan et al. 2017).

São Camilo is located adjacent to the São Camilo River on its west side, where the Quati stream, the only stream that runs through the park, flows into it. The park has a visitor center in its northeast region, and the landscape of this area has been modified by human activities, including the presence of exotic fruit trees, shrubs, and grasses, as well as an artificial lake, small buildings for visitors

(such as kiosks, bathrooms, and an entrance gate), and a main bridge/trail that connects the visitor center to the interior of the park. In the northwest portion of São Camilo, there is a swamp area with marshy soil with herbaceous vegetation of swampy areas and pioneer species, which has specific and differentiated fauna and flora that distinguishes it from the rest of the park (IAP 2006). The interior of São Camilo is characterized as a forest fragment in an advanced stage of regeneration, with clearings and a discontinuous canopy covering most of its area (Kozera and Peluci 2015). The vegetation is dominated by pioneer and early secondary species. (IAP 2006). Finally, São Camilo is surrounded by private properties, where its landscape is characterized by monocultures, sometimes of corn, sometimes of soybeans (Ribas et al. 2020).

Sampling Methods

Bird data were collected from 2011 to 2022 using three different survey schemes in a non-systematic manner. The data correspond to three different research efforts conducted by the *Universidade Federal do Paraná*, Sector Palotina. Data from 2011 to 2015 include information from the "*Aves do Parque Estadual São Camilo*" project (UFPR Banpesq 2012/004443) and "*Aves de Palotina*" (UFPR Banpesq 2011/12604) projects. Data from 2021 to 2022 were gathered as part of the "*Resistencia Antimicrobiana em Isolados Bacterianos e Identificação de Cryptosporidium spp. em Aves Silvestres em Palotina, Paraná, Brasil*" project (Biodiversity Information and Authorization System - SISBIO - License #75086-3 and Ethics Committee on Animal Use of the UFPR Palotina Sector - CEUA/Palotina - Protocol nº 09/2020). The captures in São Camilo were authorized by the state environmental agency *Instituto Água e Terra* (Protocol 17.317.251-6), SISBIO, and CEUA/Palotina.

Bird data from 2011 to 2014

Surveys were conducted through non-systematic visits to the main trail at São Camilo, guided by the Lab of Ornithology UFPR. The surveys used point counts and free observations to register bird species. The Lab Surveys included 1) scientific initiation projects for undergraduate students and Ornithology classes; 2) participation in collaborative bird inventories celebrating the Centenary of Paraná Ornithological History (IPAVE - Straube et al. 2013), which were based on 20 hours of observations; and 3) participation in the National Census of Water Birds, promoted by *Centro Nacional de Pesquisas e Conservação de Aves Silvestres* - CEMAVE, which prioritized census at wet areas. Birds were recorded over several years and in different seasons, resulting in a bird list that was combined with bird data from 2014/2015 and 2021/2022.

Bird data from 2014 to 2015

The surveys consisted of ten point counts carried out between 6 am and 10 am, 150 meters apart, and lasting 10 minutes each, within a radius of 25 meters at wet areas of São Camilo adjacent to the Quati stream and São Camilo river. The surveys were conducted monthly from August 2014 to February 2015. Bird species were identified using binoculars, and bird vocalizations were recorded by a digital recorder and a microphone. When necessary, the recorded calls were compared to available calls on the xeno-canto website (www.xeno-canto.org). To avoid double-counting the same individual, bird records beyond 50 meters of the observer were excluded.

Bird data from 2021 to 2022

Surveys consisted of point counts, mist netting, free observations, and citizen science records. To include a representative sample of birds habitats, the point counts were conducted in a non-systematic manner at various locations throughout the park, including points at the trail, visitor area, wet areas, on a part of the bank of Quati stream and park edge. The selection and length of time spent at each point counts during this sampling period varied according to the movement of birds in the pre-selected areas.

Mist netting occurred intermittently over a period of 28 days, from April to December 2021 – three times a month, with the exception of May when four samples were taken. Mist-nets were placed in seven sampling points in three sites: three in the visitors center, three inside the forest, and one in a swamp area (Fig. 1). The nets were 9x2.5m in size, with the exception of one net in the interior that was 12x2.5m. The nets were opened during dawn and remained open for six hours. The inspections occurred, on average, every 20 minutes. A sampling effort was carried out with 27.930 m^2.h. Captured birds were identified to the lowest possible taxonomic level.

Free observations were conducted to record all bird species seen or heard at São Camilo at any time, except for the methods mentioned above. These observations were made on transects at the visitor center, along the trails, and edges of São Camilo. The boundaries of the observation sites, both inside and on the edge of São Camilo, can be seen in Fig. 01. Additionally, the northwestern region of São Camilo was visited for two days in November and two days in December (totaling eight hours) because it has a distinct physical and biological structure and possibly a different fauna compared to the rest of the park (square point in Fig. 1). Furthermore, two crepuscular and nocturnal observations were conducted in August and September 2021 to identify species that are active during this period. These visits were conducted after sunset and involved walking on trails and edges, and each visit lasted about four hours.

Photographic and vocalization recordings were made whenever possible to ensure that there was sufficient evidence to support the work. Photographic records were taken with a Nikon B600 camera and deposited in the WikiAves database (Appendix 1), along with some sound recordings. In addition to the sampling period, sporadic visits to São Camilo were made between January and February 2022 with the objective of collecting data on the avifauna through photographs and vocal recordings. Species observed during these visits that were not recorded during the sampling period were also included in the inventory.

Citizen science data were used to enhance the São Camilo bird data. Species recorded by four citizen scientists were added to the species list. These bird records have been documented using photographs and uploaded onto the WikiAves platform. These records, contributed by citizen scientists, span from September 2013 to December 2022. Furthermore, the bird species records found in the management plan of São Camilo were added to this inventory (IAP 2006).

Captured and sighted birds in 2021/22 were identified based on identification guides (Sigrist, 2015) and by the mobile app developed by Cornell University, *Merlin® Bird ID* (The Cornell Lab of Ornithology, 2022). Vocalizations were identified using the *BirdNET* app (Kahl, 2021) and compared from databases such as Xeno-Canto and WikiAves.

Characterization of São Camilo's Avifauna

The avifauna functional ecology data of São Camilo were adapted from Wilman et al. (2014) for trophic categories and foraging strata. The trophic category is defined as the preferred diet of a given species, while foraging strata defines the place where an individual preferentially obtains its food. The migration pattern of species was evaluated based on Somenzari et al. (2018).

The establishment of the dependence degree of forest environments was evaluated according to the database by BirdLife International (BirdLife Datazone, http://datazone.birdlife.org) and sensitivity to anthropogenic disturbances was defined according to Stotz et al. (1996). The endemic species to Atlantic Forest were listed according to Vale et al. (2018). The conservation status of the species for the state of Paraná was based on Decree 1.1797 of November 22, 2018, while the conservation status of the species for Brazil was based on the MMA's Ordinance nº 148 (2022). The systematic order and nomenclature used in the listing of birds follow the Brazilian Committee of Ornithological Records – CBRO (*Comitê Brasileiro de Registros Ornitológicos*, acronym in Portuguese), (Pacheco et al. 2021).

Results

A total of 222 bird species were recorded in São Camilo (Appendix 1), with the majority of records (180 species) obtained during bird surveys. Additional contributions from citizen scientists and the management plan added 34 and eight species, respectively, to the final bird list. The avifauna of São Camilo is composed of 25 Orders and 56 Families, with Passeriformes being the most diverse (107 species), followed by Accipitriformes, Pelecaniformes, and Piciformes (14, 12, and 12 species, respectively). The families with the highest richness were Tyrannidae, Thraupidae, and Accipitridae (27, 19, and 14 species, respectively).

During mist netting, a total of 197 individuals belonging to 5 Orders, 25 Families, and 54 Species were captured. Among them, *Cyanoloxia brissonii* (Lichtenstein, 1823), *Stelgidopteryx ruficollis* (Vieillot, 1817), and *Trichothraupis melanops* (Vieillot, 1818) were not observed during the sample period but were identified only after their capture in mist nets. It is worth noting that due to the morphological similarity between the *Elaenia* individuals, only *Elaenia parvirostris* Pelzeln, 1868 was accurately identified in the mist net screenings, while the other species were recorded as *Elaenia* sp.

The management plan of São Camilo, dated from the early 2000s, recorded a total of 43 bird species. Among them, eight were only recorded in this dataset and not during field surveys or citizen scientists' contributions. These birds are *Patagioenas cayennensis* (Bonnaterre, 1792), *Nyctiphrynus ocellatus* (Tschudi, 1844), *Lurocalis semitorquatus* (Gmelin, 1789), *Geranoaetus albicaudatus* (Vieillot, 1816), *Mackenziaena severa* (Lichtenstein, 1823), *Automolus leucophthalmus* (Wied, 1821), *Chiroxiphia caudata* (Shaw and Nodder 1793), and *Poecilotriccus plumbeiceps* (Lafresnaye, 1846).

Campylorhamphus trochilirostris (Lichtenstein, 1820) was frequently sighted during 2021, while *Pteroglossus bailloni* (Vieillot, 1819) was recorded only by citizen scientists. Both species are classified as vulnerable in the state of Paraná. *Rhea americana* (Linnaeus, 1758), categorized as critically endangered in the state, and *Polytmus guainumbi* (Pallas, 1764), categorized as near threatened, were also recorded by citizen scientists. However, *N. ocellatus*, categorized as endangered for the state, was not found during the sampling steps or by records of citizen scientists. Its only record was made by the management plan.

Endemic species of the Atlantic Forest were recorded during all sampling periods, also being surveyed by both citizen scientists and the management plan, totaling 5.4% of the bird species in São Camilo. *Aramides saracura* (Spix, 1825), *Melanerpes flavifrons* (Vieillot, 1818), *Picumnus temminckii* Lafresnaye, 1845, and *Tachyphonus coronatus* (Vieillot, 1822) were frequently sighted in field surveys. On the other hand, *Baryphthengus ruficapillus* (Vieillot, 1818), *Campephilus robustus* (Lichtenstein, 1818), *Pteroglossus bailloni* (Vieillot, 1819), *Saltator fuliginosus* (Daudin, 1800), and *Stephanoxis loddigesii* (Gould, 1831) were recorded solely by citizen scientists. *Mackenziaena severa*, *A. leucophthalmus*, and *C. caudata*, mentioned in the management plan, were not observed during the sampling period.

Vocalizations of nocturnal and crepuscular species *Megascops choliba* (Vieillot, 1817), *Strix virgata* (Cassin, 1849), and especially *Nyctidromus albicollis* (Gmelin, 1789) were constantly heard before dawn, while the vocalization of *Tyto furcata* (Temminck, 1827) and *Dromococcyx pavoninus* Pelzen, 1870 were identified only during a nocturnal visit.

The avifauna of São Camilo had a dominance of insectivorous species (50.9%), followed by omnivorous (12.6%) and frugivorous (9%) species. Carnivorous/Generalist was the least representative feeding habit, with 1.8% of the recorded bird species (Figure 2). There was a predominance of bird taxa foraging at ground level (60), mid-high (38), understory (29) and canopy (15). However, approximately 27% of the birds had preference for more than one kind of foraging strata, with the most common species foraging both in the understory and mid-high (6.3%), as well as in the understory and soil (5.4%) (Table 1).

Figure 2. Graphical representation of the preferential diet of the avifauna found in São Camilo State Park, Palotina, western Paraná.

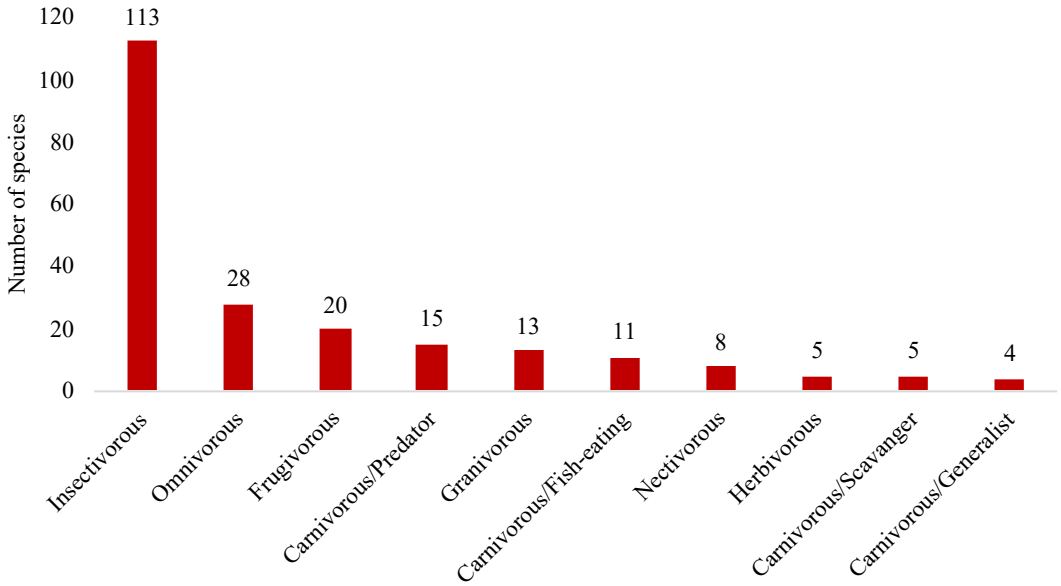


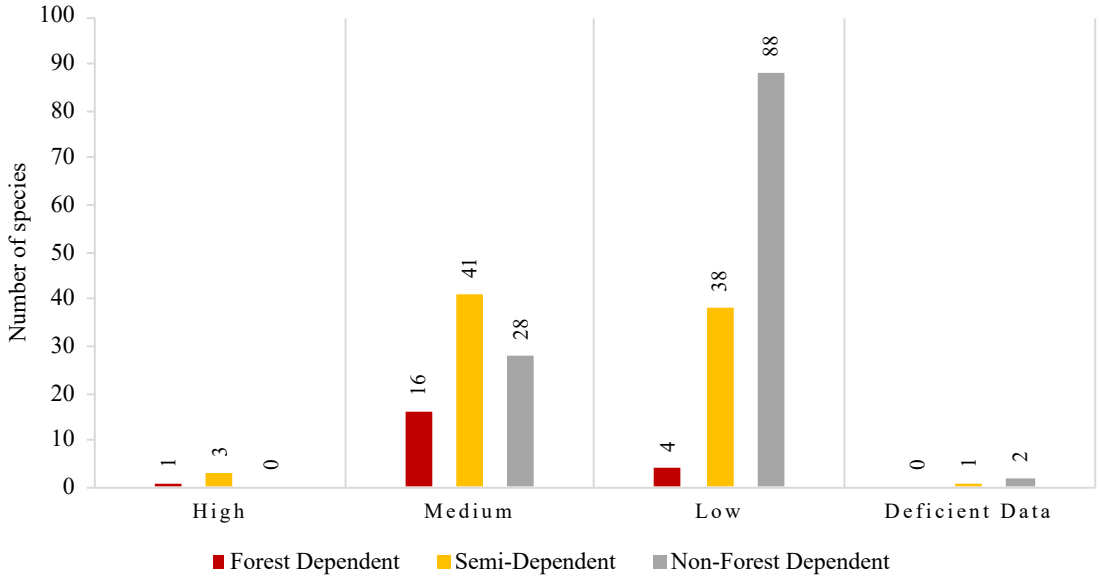
Table 1. Preferred Foraging Strata of the Avifauna in São Camilo State Park, Palotina, western Paraná.

Preferred Foraging Strata	Number of species	%
Ground	60	27.0
Mid-High	38	17.1
Understory	29	13.1
Canopy	15	6.76
Understory/Mid-High	14	6.31
Ground/Understory	12	5.41
Water surface	11	4.95
Below the water Surface	8	3.60
Water Surface/Ground	8	3.60
Mid-High/Canopy	6	2.70
Ground/Understory/Mid-High	5	2.25
Understory/Mid-High/Canopy	4	1.80
Ground/Canopy	3	1.35
Ground/Understory/Mid-High/Canopy/Aerial	3	1.35
Aerial	2	0,90
Understory/Aerial	1	0.45
Understory/Mid-High/Canopy/Aerial	1	0.45
Ground/Mid-High/Canopy	1	0.45
Understory/Mid-High/Aerial	1	0.45

Nine species of migratory birds – *Coccyzus americanus* (Linnaeus, 1758), *Coccyzus melacoryphus* Vieillot, 1817, *Calidris melanotos* (Vieillot, 1819), *Phalaropus tricolor* (Vieillot, 1819), *Tringa solitaria* Wilson, 1813, *Pandion haliaetus* (Linnaeus, 1758), *Harpagus diodon* (Temminck, 1823), *Buteo swainsoni* Bonaparte, 1838 and *Falco peregrinus* Tunstall, 1771 – have been recorded in São Camilo. There were 26 partially migratory species, most of which (13 taxa) belong to the Tyrannidae family.

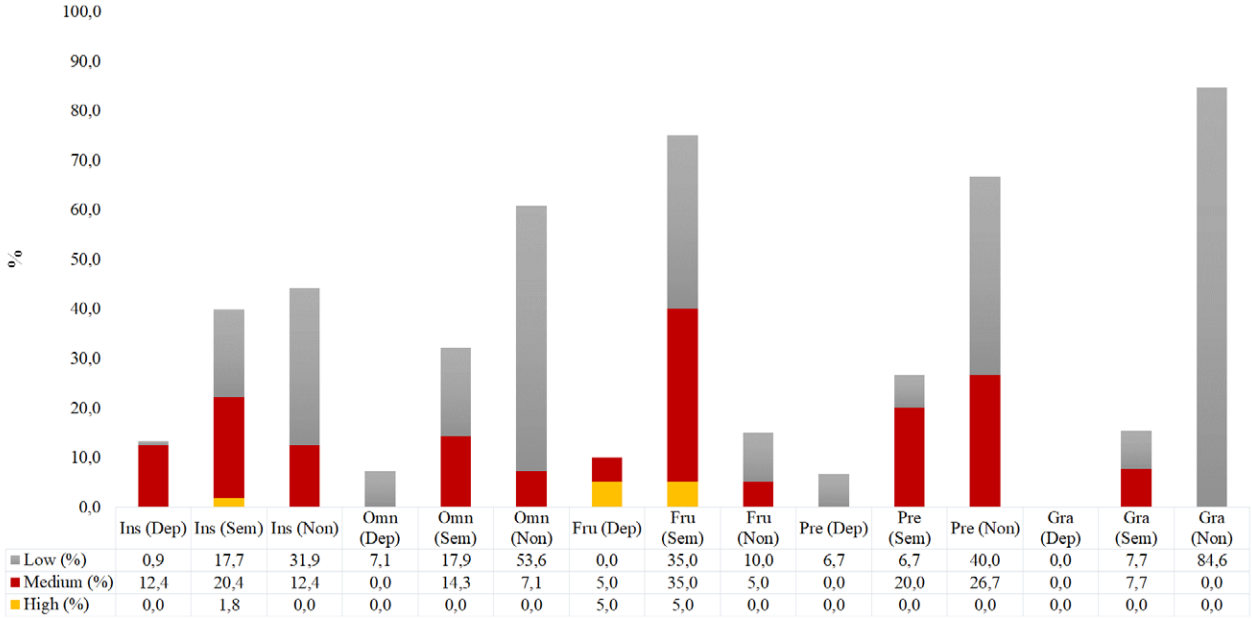
Approximately 40% of the avifauna in the study area can be classified as medium to highly sensitive to environmental disturbances. The majority of birds had low sensitivity (130 taxa), followed by medium sensitivity (85 taxa). Only four species were identified as highly sensitive: the insectivorous *C. trochilirostris* and *D. pavoninus*, as well as the frugivorous *P. bailloni* and *Pteroglossus castanotis* Gould, 1834. The sensitivity of three migratory birds (*C. melanotos*, *P. tricolor*, and *T. solitaria*) could not be determined. Forest-dependent birds were less common (21) than semi-dependent (83) and non-forest dependent birds (118) (see Figure 3).

Figure 3. Degree of sensitivity of anthropogenic disturbances in relation to the degree of forest dependence found in the avifauna of São Camilo State Park, western Paraná.



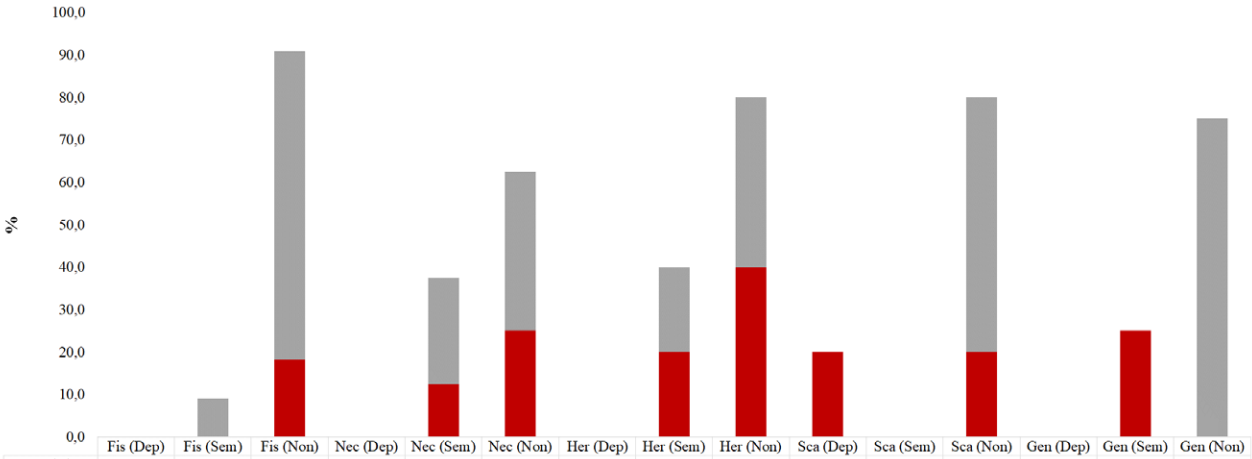
The high sensitivity to anthropogenic disturbances was found only in forest-dependent and semi-dependent frugivorous birds and semi-dependent insectivorous birds. Among the most representative diets, it was observed that insectivorous birds have a higher proportion of non-forest dependent species with low sensitivity to anthropogenic disturbances (31.9%, n=36), the same happened with omnivorous birds (53.6%, n=15). Frugivorous birds showed a higher proportion of semi-dependent species with medium to low sensitivity (35%, n=7). Granivorous, carnivorous/generalist, and carnivorous/fish-eating birds had the highest proportion of non-forest dependent species with low sensitivity to disturbances (84.6%, n=11; 75%, n=3; and 72.7%, n=8 respectively). In addition, the highest proportion of species with medium sensitivity was found among non-forest dependent herbivorous birds (40%, n=2) and semi-dependent frugivorous birds (35%, n=7) (Figure 4a,b).

Figure 4a. Relationship between diet, degree of forest dependence, and sensitivity to anthropogenic disturbances in the avifauna found in São Camilo State Park, western Paraná (Ins: Insectivorous; Omn: Omnivores; Fru: Frugivorous; Pre: Carnivorous/Predator; Gra: Granivorous; Dep: Forest-dependent; Sem: Semi-dependent; Non: Non-Forest dependent).



	Ins (Dep)	Ins (Sem)	Ins (Non)	Omn (Dep)	Omn (Sem)	Omn (Non)	Fru (Dep)	Fru (Sem)	Fru (Non)	Pre (Dep)	Pre (Sem)	Pre (Non)	Gra (Dep)	Gra (Sem)	Gra (Non)
Low (%)	0,9	17,7	31,9	7,1	17,9	53,6	0,0	35,0	10,0	6,7	6,7	40,0	0,0	7,7	84,6
Medium (%)	12,4	20,4	12,4	0,0	14,3	7,1	5,0	35,0	5,0	0,0	20,0	26,7	0,0	7,7	0,0
High (%)	0,0	1,8	0,0	0,0	0,0	0,0	5,0	5,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0

Figure 4b. Relationship between diet, degree of forest dependence, and sensitivity to anthropogenic disturbances in the avifauna found in São Camilo State Park, western Paraná (Fis: Carnivorous/Fish-eating; Nec: Nectivorous; Her: Herbivorous; Sca: Carnivorous/Scavanger; Gen: Carnivorous/Generalist; Dep: Forest-dependent; Sem: Semi-dependent; Non: Non-Forest dependent).



	Fis (Dep)	Fis (Sem)	Fis (Non)	Nec (Dep)	Nec (Sem)	Nec (Non)	Her (Dep)	Her (Sem)	Her (Non)	Sca (Dep)	Sca (Sem)	Sca (Non)	Gen (Dep)	Gen (Sem)	Gen (Non)
Low (%)	0,0	9,1	72,7	0,0	25,0	37,5	0,0	20,0	40,0	0,0	0,0	60,0	0,0	0,0	75,0
Medium (%)	0,0	0,0	18,2	0,0	12,5	25,0	0,0	20,0	40,0	20,0	0,0	20,0	0,0	25,0	0,0
High (%)	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0

Discussion

The present survey adds 179 new records for São Camilo, computing a total of 222 bird species in this protected area, equivalent to approximately 11,3% of the brazilian birds (n=1971), about 24,9% of the bird species found in the Atlantic Forest (n=891) and 29% of the avifauna of Paraná state (n=766) (Lima 2013; Paraná 2018; Pacheco et al. 2021; de Paula et al. 2022). Despite well studied in few sites, bird inventories from Semideciduous Seasonal Forest are scarce, mainly with information about

distribution and richness (Straube et al. 1996; Vasconcelos and Ross 2000; Straube and Urben-Filho 2002; Torezan et al. 2020). The relevance of the present paper for conservation of this site is evident, bringing new dataset for an endangered Atlantic Forest site and also encouraging new bird studies in the area.

The results presented here, also enhance the importance of the records collected by citizen scientists (and citizen science data available). The data from citizen scientists were essential for this study, since 34 species could only be added to this inventory due to the previous record. According to Mamede et al. (2017), in several occasions a researcher does not have all the conditions, opportunities, and real possibilities to gather data in an extensive and thoroughly way, thus, encouraging social participation allows the fulfillment of scientific objectives and a great help towards conservation and understanding of the local biodiversity.

Habitat degradation and forest fragmentation resulting from agricultural activities and urban expansion are the main threats to the bird species of the Atlantic Forest, despite their high mobility (ICMBio 2018). This occurs because some species have restrictive ecological niches, and agricultural or urban areas act as barriers, preventing movement between unconnected fragments (Boesing et al. 2021). Additionally, when canopy birds fly in open areas, they become susceptible to predators or being run over (Dias et al. 2021; Faria et al. 2022). Therefore, São Camilo acts as a conservation area and an important ecological corridor, and is essential for maintaining the avifauna of Palotina and western Paraná, particularly for species with more restricted ecological niches.

The importance of São Camilo as a conservation area is evident not only for its diversity, but also for the detection of important threatened birds in Paraná, highly sensitive to anthropogenic impacts and endemic to the Atlantic Forest Biome. The high-sensible and regionally endangered species *C. trochilirostris* stands out as it is only found in the Paraná's western and northwestern region, being considered as vulnerable at state level (Decree No. 11.797, Paraná 2018). Individuals of this species were constantly observed in São Camilo during 2021, often forming mixed flocks with *Dendrocolaptes platyrostris* Spix, 1825. The feeding behavior of *C. trochilirostris* makes them sensitive to anthropogenic disturbances, since their diet is restricted to insects that live inside logs. Therefore, they need preserved environments and large territories to survive (Silva 1992). In this sense, the São Camilo can be an extremely important refuge for this species in Paraná, as the site preserves favorable conditions for their survival.

The importance of São Camilo is also evidenced by other registered species as *Rhea americana*, *Penelope superciliaris* Temminck, 1815 and *Amazona aestiva* (Linnaeus, 1758), all listed locally and globally as endangered (Paraná 2018; IUCN 2022) and *P. bailloni*, listed as vulnerable for the state of Paraná and Near Threatened for Brazil, also as an endemic species of the Atlantic Forest (Paraná 2018; Vale et al. 2018; MMA 2022).

Rhea americana was recorded by a citizen scientist in 2018 and, according to reports from São Camilo staff, its occurrence was common at the surroundings of São Camilo in an earlier period. Based on WikiAves data, there are only 12 records of this species for Paraná State, most of which were made in western and northwestern Paraná in the last 14 years (WikiAves 2022). Because of its high mobility in open fields (Erize & Villafañe 2016) and its large hunting susceptibility (Constantino 2018), we cannot confirm that this species is still found in this forest fragment, as it may have moved to other regional fragments.

Regarding other endangered species, *P. superciliaris* is experiencing a population decrease due to deforestation and hunting, while *A. aestiva* is being affected by deforestation and illegal capture and trade (IUCN 2022). According to recent IUCN data, *P. superciliaris* is categorized as Near Threatened; however, it is still listed as Low Concern in Paraná and Brazil, a classification that should be reconsidered in the next surveys of threatened species. In São Camilo and its surrounding areas, *P. bailloni* was recorded by a citizen scientist forming a mixed group with *P. castanotis*. Mixed flocks of these two species favor seed dispersal since they are frugivorous species that move in large extensions of preserved areas (Athiê 2014; Wilman et al. 2014). These records highlight the importance of São Camilo for the conservation of threatened species.

Twelve Atlantic Forest endemic species occur in São Camilo. Because Atlantic Forest is one of the most threatened Biome in the world, these species become equally threatened (Vale et al. 2018). There are about 890 bird species at Atlantic Forest, 223 species are endemic and out of these, 31% are endangered (Lima 2013; Vale et al. 2018). The presence of endemic and endangered species in São Camilo demonstrates that this conservation area has been fulfilling its main objective, which is, according to the *Sistema Nacional de Unidades de Conservação da Natureza* (2000), to contribute to the maintenance of biological diversity and its genetic resources, protecting endangered species from extinction, both nationally and regionally.

São Camilo is an important habitat not only for resident bird species, but also for migratory and partially migratory species. Nearctic birds, including *F. peregrinus*, *B. swainsoni*, *C. melanotos*, *P. tricolor*, and *T. solitaria*, have been observed in São Camilo. These species breed in North America and utilize neotropical ecosystems during their non-breeding periods (Valente et al. 2011; Somenzari et al. 2018; ICMBio 2019; Kane et al. 2020). The ecological resources available in São Camilo, such as foraging and resting habitats, meet the needs of these migratory species, facilitating their presence in the area and ensuring their migratory success.

However, conservation efforts for migratory species must protect their habitats along their entire territories, which often span multiple countries with different legislation. Therefore, protecting migratory species requires more effective measures to protect other remaining areas with similar environments in western Paraná, in addition to São Camilo.

The study revealed that non-forest dependent birds were the most common species in São Camilo, which is atypical for Atlantic Forest fragments (Manhães and Ribeiro 2011; Vale et al. 2018; Gava-Just et al. 2020). This can be attributed to excessive clearing of the surrounding areas of the studied fragment. The original Atlantic Forest has been severely degraded in most of the municipalities in western Paraná State, with less than 6% of forest remaining in many of these territories (SOS Mata Atlântica/INPE 2014). The expansion of agricultural and livestock fields may be leading to a decline in typical taxa of the Atlantic Forest in the region, such as small forest-dependent insectivorous birds (Vale et al. 2018). The abundance of low-sensitivity bird species in São Camilo may also indicate the encroachment of rural areas in the region. Nonetheless, the discovery of sensitive and forest-dependent species in São Camilo should not be ignored, as it highlights their resilience and the importance of conservation efforts, even in extremely degraded regions, underscoring the need for environmental policies to safeguard these species.

The high percentage of insectivorous species in regard to other trophic categories in the São Camilo was expected and can be explained by the fact that tropical environments are responsible for harboring the greatest diversity of insectivorous birds on the planet (Sherry et al. 2020). Even

so, understory-insectivorous birds are among the most threatened avifauna species by habitat loss (Luck et al. 2013; Burivalova et al. 2015). These birds have limited movement and cannot maintain populations or reach distant fragments (Lindell et al. 2007). In this sense, habitat fragmentation and the absence of ecological corridors lead to a decline in these bird populations (Sherry 2021). In São Camilo, 19 species presenting this preferred habit were detected, of which two species are forest-dependent and 10 semi-dependent, corroborating the need for forested environments in order to preserve these species. In addition, the frequent presence of woodcreepers and woodpeckers in São Camilo is indicative of good environmental quality, since they are specialist insectivorous birds, depending on intact environments to thrive (Sick 1997). The highly diversity of Brazilian Atlantic Forest avifauna combined with its sensitivity to anthropogenic disturbances makes birds excellent and important environmental quality bioindicators (Bornato et al. 2018).

The presence of canopy frugivorous species is also an indicator of environmental quality, since, like understory insectivorous, they are birds specialized to these environments and are usually associated with areas in the final stages of ecological succession (Gray et al. 2007). Among the frugivorous taxa found in São Camilo, only *C. brissonii, Euphonia chlorotica* (Linnaeus 1766) and *T. amaurochalinus* were categorized as non-forest dependent. Among the frugivorous birds found in the São Camilo, the species *Penelope obscura* Temminck, 1815, *T. amaurochalinus, E. chlorotica*, *M. manacus,* and *Ramphastos toco* Statius Muller 1776 are characterized for being effective seed dispersers (Ferreira et al. 2017). In addition, large and medium-sized birds such as *P. superciliaris* Temminck, 1815, *P. bailloni*, and *P. castanotis* have the ability to disperse seeds over long distances (Wotton and Kelly 2012). In this sense, the diversity of frugivorous birds found in São Camilo may provide a fundamental ecological service to São Camilo and its connective fragments.

In fragmented environments where resources are limited and specialist species are reduced, omnivorous species may thrive due to their trophic plasticity, allowing them to adapt and obtain food from various sources (Vieira et al. 2013; Morante-Filho et al. 2015). Nonetheless, among the omnivorous taxa identified in this study, 11 rely exclusively on tree strata for foraging, while five are partially dependent on forests, five are non-forest dependent, and only one is fully forest-dependent.

The foraging strata of birds may vary according to resource availability, anthropogenic disturbances, and in order to avoid competition in times of migration (Oliveira 2015). Thus, the diversity of strata in a fragment can increase the survival of a specie, since it allows for greater plasticity of behaviors. However, birds limited to a single foraging strata tend to be more susceptible to environmental changes (Ducatez et al. 2020). São Camilo is characterized as a secondary forest fragment in an advanced stage of regeneration, i.e., it presents formations in the most advanced stage of successional development, constituting a complex community with high floristic diversity (CONAMA 1994; Kozera and Peluci 2015). In this perspective, the São Camilo allows for the behavioral plasticity of birds for foraging, since its floristic diversity is wide.

The quality of an avifauna survey depends on essential factors such as methodology and time of research. In this study, new species were observed until the last moment, including *Euscarthmus meloryphus* Wield, 1831 captured in a mist net, two individuals of *Sarcoramphus papa* (Linnaeus, 1758) sighted during the last visit to São Camilo in February 2022, and one individual of *Tityra cayana* (Linnaeus, 1766) photographed by a citizen scientist in December 2022. Despite recording a wide range of species, sustained and continuous studies of the São Camilo avifauna are necessary since increasing the sampling effort may result in more new species being inventoried. Long-term

studies may also confirm the permanence of species that were only sampled in the management plan and reveal other rare, endemic, or migratory birds. Additionally, the interior of São Camilo has been little sampled due to the area's difficulty of access, making it a potential site for future studies where new species dependent on these environments may be discovered. Furthermore, we recommend conducting new studies on other faunal groups in the park since São Camilo offers excellent research conditions, and its data should be shared with the community.

Given the constant reduction of the Semideciduous Seasonal Forest in western Paraná, preserving forest fragments is extremely important for biodiversity maintenance in the region. This study pointed the occurrence of 222 bird species at São Camilo, among them endemic, endangered, migratory, sensitive to anthropogenic disturbances, and forest-dependent bird species. Because its avifauna presents several ecological niches and because São Camilo is part of an important ecological corridor, being one of the last remaining native vegetation in the region, this conservation area has been fulfilling its objective of conserving the fauna both of the municipality of Palotina and of the western region of Paraná, but we warn that new studies are essential to understand the ecology and the importance of all the park's fauna.

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Data availability statement: A portion of the data is included in the Master's thesis of the first author, available in the *Universidade Federal do Paraná* (UFPR) Repository (link: https://acervodigital.ufpr.br/handle/1884/75750). Furthermore, most of the testimonial material (photographs and vocalizations) are published on the WikiAves platform (the access code for the material can be found in the appendix of this study).

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APPENDIX

Appendix 1. List of birds of the São Camilo State Park (São Camilo), Palotina, Paraná, Brazil. MN: Number of individuals captured by mist net. Diet (DIE): OMN = Omnivorous, HER = Herbivorous, FRU = Frugivorous, GRA = Granivorous, NEC = Nectivorous, INS = Insetivorous, PRE = Carnivorous/Predator, FIS = Carnivorous/Fish-Eating, GEN = Carnivorous/Generalist, SCA = Carnivorous/Scavenger; Foraging Strata (FOR): GR = Ground, US = Understory, MH = Midhigh, CA = Canopy, A = Aerial, WBS = Below the water surface; WAS = Around the water surface; Sensitivity to Disturbance (S): L = Low, M = Medium, H = High; Degree of forest dependence (FD): ND = Non-dependent, SD = Semi-dependent, DP = Dependent; Endemism (END): END = Endemic. – = Not Endemic; Migration Pattern (MIG): MPR = Partially Migratory, MGT = Migratory, RES = Resident; Conservation status for Paraná (PR) and Brazil (BR): LC = Least Concern, NT = Near Threatened, VU = Vulnerable, EN = Endangered, CR = Critical, Testimony (TEST): Record published on the WikiAves platform (to access the record, access the website http://www.wikiaves.com and search for the testimony code); IAP (2006): records on the management plan.

Taxon Name	English Name	Portuguese Name	MN	DIE	FOR	S	FD	END	MIG	PR	BR	TEST
Rheiforme Bonaparte, 1849												
Rheidae Bonaparte, 1849												
Rhea americana (Linnaeus, 1758)	Greater Rhea	Ema	-	OMN	GR	L	ND	-	RES	CR	NT	WA3163332
Tinamiformes Huxley, 1872												
Tinamidae Gray, 1840												
Crypturellus tataupa (Temminck, 1815)	Tataupa Tinamou	Inhambu-chintã	-	OMN	GR/US	L	DP	-	RES	LC	LC	WA4611927
Rhynchotus rufescens (Temminck, 1815)	Red-winged Tinamou	Perdiz	-	OMN	GR	L	ND	-	RES	LC	LC	WA4516799
Anseriformes Linnaeus, 1758												
Anatidae Leach, 1820												
Dendrocygna viduata (Linnaeus, 1766)	White-Faced Whistling-Duck	Irerê	-	HER	WBS	L	ND	-	RES	LC	LC	WA4285268
Cairina moschata (Linnaeus, 1758)	Muscovy Duck	Pato-do-Mato	-	OMN	WAS/GR	M	SD	-	RES	LC	LC	WA4540864
Amazonetta brasiliensis (Gmelin, 1789)	Brazilian Teal	Marreca-Ananaí	-	OMN	GR	L	SD	-	RES	LC	LC	WA4620085
Nomonyx dominicus (Linnaeus, 1766)	Masked Duck	Marreca-de-Bico-Roxo	-	HER	WBS	M	ND	-	RES	LC	LC	WA4588658
Galliformes Linnaeus, 1758												
Cracidae Rafinesque, 1815												
Penelope superciliaris Temminck, 1815	Rusty-margined Guan	Jacupemba	-	FRU	GR/MH/CA	M	SD	-	RES	LC	LC	WA4714302
Penelope obscura Temminck, 1815	Dusky-legged Guan	Jacuaçu	-	FRU	GR/US/MH	M	SD	-	RES	LC	LC	WA4714307
Podicipediformes Fürbringer, 1888												
Podicipedidae Bonaparte, 1831												

Taxon Name	English Name	Portuguese Name	MN	DIE	FOR	S	FD	END	MIG	PR	BR	TEST
Tachybaptus dominicus (Linnaeus, 1766)	Least Grebe	Mergulhão-Pequeno	-	INS	WBS	M	ND	-	RES	LC	LC	WA4588659
Columbiformes Latham, 1790												
Columbidae Leach, 1820												
Patagioenas picazuro (Temminck, 1813)	Picazuro Pigeon	Pomba-Asa-Branca	-	HER	GR/US/MH	M	SD	-	RES	LC	LC	WA4726394
Patagioenas cayennensis (Bonnaterre, 1792)	Pale-vented Pigeon	Pomba-Galega	-	FRU	MH/CA	M	SD	-	RES	LC	LC	IAP (2006)
Leptotila verreauxi Bonaparte, 1855	White-tipped Dove	Juriti-Pupu	5	GRA	GR	L	SD	-	RES	LC	LC	WA4726690
Zenaida auriculata (Des murs, 1847)	Eared Dove	Avoante	1	GRA	MH	L	ND	-	RES	LC	LC	WA4496648
Columbina talpacoti (Temminck, 1811)	Ruddy Ground-Dove	Rolinha-roxa	21	GRA	GR	L	ND	-	RES	LC	LC	WA4726743
Columbina squammata (Lesson, 1831)	Scaled Dove	Fogo-Apagou	-	GRA	GR	L	ND	-	RES	LC	LC	WA4665619
Cuculiformes Wagler, 1830												
Cuculidae Leach, 1820												
Guira guira (Gmelin, 1788)	Guira Cuckoo	Anu-Branco	-	PRE	GR	L	ND	-	RES	LC	LC	WA4557844
Crotophaga major Gmelin, 1788	Greater Ani	Anu-Coroca	-	OMN	GR/CA	M	SD	-	RES	LC	LC	WA4665539
Crotophaga ani Linnaeus, 1758	Smooth-billed Ani	Anu-Preto	4	OMN	GR	L	ND	-	RES	LC	LC	WA4567861
Tapera naevia (Linnaeus, 1766)	Striped Cuckoo	Saci	-	INS	GR	L	ND	-	RES	LC	LC	WA4511716
Dromococcyx pavoninus Pelzeln, 1870	Pavonine Cuckoo	Peixe-Frito-Pavonino	-	INS	GR/US	H	SD	-	RES	LC	LC	WA4279565
Piaya cayana (Linnaeus, 1766)	Squirrel Cuckoo	Alma-de-Gato	-	INS	CA	L	SD	-	RES	LC	LC	WA4727731
Coccyzus melacoryphus Vieillot, 1817	Dark-billed Cuckoo	Papa-Lagarta-Acanelado	-	INS	GR	L	SD	-	MGT	LC	LC	WA4521599
Coccyzus americanus (Linnaeus, 1758)	Yellow-billed Cuckoo	Papa-Lagarta-de-Asa-Vermelha	-	INS	CA	M	SD	-	MGT	LC	LC	WA4511720
Nyctibiiformes Yuri et al. 2013												
Nyctibiidae Chenu & Des Murs, 1851												
Nyctibius griseus (Gmelin, 1789)	Common Potoo	Mãe-da-Lua	-	INS	MH	L	SD	-	RES	LC	LC	WA4726342
Caprimulgiformes Rigway, 1881												
Caprimulgidae Vigors, 1825												
Nyctiphrynus ocellatus (Tschudi, 1844)	Ocellated poorwill	Bacurau-Oceolado	-	INS	A	M	DP	-	RES	EN	LC	IAP (2006)
Lurocalis semitorquatus (Gmelin, 1789)	Short-tailed Nighthawk	Tuju	-	INS	MH	M	SD	-	MPR	LC	LC	IAP (2006)
Nyctidromus albicollis (Gmelin, 1789)	Common Pauraque	Bacurau	-	INS	GR	L	SD	-	RES	LC	LC	WA4468477
Apodiformes Peters, 1940												

Taxon Name	English Name	Portuguese Name	MN	DIE	FOR	S	FD	END	MIG	PR	BR	TEST
Trochilidae Vigors, 1825												
Phaethornis pretrei (Lesson & Delattre, 1839)	Planalto Hermit	Rabo-Branco-Acanelado	-	NEC	US	L	SD	-	RES	LC	LC	WA3152230
Polytmus guainumbi (Pallas, 1764)	White-tailed Goldenthroat	Beija-Flor-de-Bico-Curvo	-	NEC	US	M	ND	-	RES	NT	LC	WA4714337
Anthracothorax nigricollis (Vieillot, 1817)	Black-throated Mango	Beija-Flor-de-Veste-Preta	-	NEC	CA	L	ND	-	MPR	LC	LC	WA4714310
Chlorostilbon lucidus (Shaw, 1812)	Glittering-bellied Emerald	Besourinho-de-Bico-Vermelho	-	NEC	MH	L	SD	-	RES	LC	LC	WA4715028
Stephanoxis loddigesii (Gould, 1831)	Violet-crowned Plovercrest	Beija-Flor-de-Topete-Azul	-	NEC	US	M	SD	END	RES	LC	LC	WA4487339
Eupetomena macroura (Gmelin, 1788)	Swallow-tailed Hummingbird	Beija-Flor-Tesoura	-	NEC	MH	L	ND	-	RES	LC	LC	-
Hylocharis chrysura (Shaw, 1812)	Gilded Hummingbird	Beija-Flor-Dourado	-	NEC	MH	M	ND	-	RES	LC	LC	WA4726768
Gruiformes Bonaparte, 1854												
Aramidae Bonaparte, 1852												
Aramus guarauna (Linnaeus, 1766)	Limpkin	Carão	-	OMN	WAS/GR	M	ND	-	RES	LC	LC	WA4540788
Rallidae Rafinesque, 1815												
Laterallus melanophaius (Vieillot, 1819)	Rufous-sided Crake	Sanã-Parda	-	INS	WAS/GR	L	ND	-	RES	LC	LC	-
Mustelirallus albicollis (Vieillot, 1819)	Ash-throated Crake	Sanã-Carijó	-	INS	GR	M	ND	-	RES	LC	LC	IAP (2006)
Pardirallus nigricans (Vieillot, 1819)	Blackish Rail	Saracura-Sanã	-	INS	WAS	M	ND	-	RES	LC	LC	WA4468978
Aramides saracura (Spix, 1825)	Slaty-breasted Wood-Rail	Saracura-do-Mato	-	INS	GR	M	SD	END	RES	LC	LC	WA4726701
Gallinula galeata (Lichtenstein, 1818)	Common Gallinule	Frango-D'água-Comum	-	OMN	GR	L	ND	-	RES	LC	LC	WA4588661
Charadriiforme Huxley, 1867												
Charadriidae Leach, 1820												
Vanellus chilensis (Molina, 1782)	Southern Lapwing	Quero-Quero	-	INS	GR	L	ND	-	RES	LC	LC	WA4508125
Recurvirostridae Bonaparte, 1831												
Himantopus melanurus Vieillot, 1817	White-backed Stilt	Pernilongo-de-Costas-Branca	-	INS	WAS	M	ND	-	RES	LC	LC	-
Scolopacidae Rafinesque, 1815												
Calidris melanotos (Vieillot, 1819)	Pectoral Sandpiper	Maçarico-de-Colete	-	INS	GR	DD	ND	-	MGT	LC	LC	-
Phalaropus tricolor (Vieillot, 1819)	Wilson's Phalarope	Pisa-n'água	-	INS	WAS	DD	ND	-	MGT	LC	LC	-
Tringa solitaria Wilson, 1813	Solitary Sandpiper	Maçarico-Solitário	-	INS	WAS/GR	DD	SD	-	MGT	LC	LC	-
Jacanidae Chenu & Des Murs, 1854												
Jacana jacana (Linnaeus, 1766)	Wattled Jacana	Jaçanã	-	INS	WAS/GR	L	ND	-	RES	LC	LC	-

Taxon Name	English Name	Portuguese Name	MN	DIE	FOR	S	FD	END	MIG	PR	BR	TEST
Ciconiiformes Bonaparte, 1854												
Ciconiidae Sundevall, 1836												
Mycteria americana Linnaeus, 1758	Wood Stork	Cabeça-Seca	-	FIS	WAS/GR	L	ND	-	RES	LC	LC	WA4726387
Suliformes Sharpe, 1891												
Anhingidae Reinchenbach, 1849												
Anhinga anhinga (Linnaeus, 1766)	Anhinga	Biguatinga	-	FIS	WBS	M	ND	-	RES	LC	LC	WA4285237
Phalacrocoracidae Reichenbach, 1849												
Nannopterum brasilianus (Gmelin, 1789)	Neotropic Cormorant	Biguá	-	FIS	WBS	L	ND	-	RES	LC	LC	WA4285241
Pelecaniformes Sharpe, 1891												
Ardeidae Leach, 1820												
Tigrisoma lineatum (Boddaert, 1783)	Rufescent Tiger-Heron	Socó-Boi	-	INS	WAS	M	ND	-	RES	LC	LC	WA3515074
Nycticorax nycticorax (Linnaeus, 1758)	Black-crowned Night-Heron	Socó-Dorminhoco	-	FIS	WAS/GR	L	ND	-	RES	LC	LC	WA5038492
Butorides striata (Linnaeus, 1758)	Striated Heron	Socózinho	-	FIS	WAS	L	ND	-	RES	LC	LC	WA4598488
Bubulcus ibis (Linnaeus, 1758)	Cattle Egret	Garça-Vaqueira	-	INS	GR	L	ND	-	RES	LC	LC	WA4736705
Ardea cocoi Linnaeus, 1766	Cocoi Heron	Garça-Moura	-	FIS	WAS	L	ND	-	RES	LC	LC	WA4693710
Ardea alba Linnaeus, 1758	Great Egret	Garça-Branca-Grande	-	FIS	WAS/GR	L	ND	-	RES	LC	LC	WA4285234
Syrigma sibilatrix (Temminck, 1824)	Whistling Heron	Maria-Faceira	-	INS	WAS	M	ND	-	RES	LC	LC	WA4652558
Egretta thula (Molina, 1782)	Snowy Egret	Garça-Branca-Pequena	-	OMN	WAS	L	ND	-	RES	LC	LC	-
Threskiornithidae Poche, 1904												
Mesembrinibis cayennensis (Gmelin, 1789)	Green Ibis	Coró-Coró	-	INS	GR	M	SD	-	RES	LC	LC	WA4611873
Phimosus infuscatus (Lichtenstein, 1823)	Bare-faced Ibis	Tapicuru	-	INS	WAS	M	ND	-	RES	LC	LC	WA4508133
Theristicus caudatus (Boddaert, 1783)	Buff-necked Ibis	Curicaca	-	INS	GR	L	ND	-	RES	LC	LC	WA4285286
Platalea ajaja Linnaeus, 1758	Roseate Spoonbill	Colhereiro	-	OMN	WAS	M	ND	-	MPR	LC	LC	WA2414464
Cathartiformes Seebohm, 1890												
Cathartidae Lafresnaye, 1839												
Sarcoramphus papa (Linnaeus, 1758)	King Vulture	Urubu-Rei	-	SCA	GR	M	DP	-	RES	LC	LC	WA4736738
Coragyps atratus (Bechstein, 1793)	Black Vulture	Urubu-de-Cabeça-Preta	-	SCA	GR	L	ND	-	RES	LC	LC	WA4486165
Cathartes aura (Linnaeus, 1758)	Turkey Vulture	Urubu-de-Cabeça-Vermelha	-	SCA	GR	L	ND	-	RES	LC	LC	WA4508134
Cathartes burrovianus Cassin, 1845	Lesser Yellow-headed Vulture	Urubu-de-Cabeça-Amarela	-	SCA	GR	M	ND	-	RES	LC	LC	WA4468481

Taxon Name	English Name	Portuguese Name	MN	DIE	FOR	S	FD	END	MIG	PR	BR	TEST
Accipitriformes Bonaparte, 1831												
Accipitridae Vigors, 1824												
Pandion heliaetus (Linnaeus, 1758)	Osprey	Águia-Pescadora	-	FIS	WAS	M	ND	-	MGT	LC	LC	-
Gampsonyx swainsonii Vigors, 1825	Pearl Kite	Gaviãozinho	-	PRE	GR	L	ND	-	RES	LC	LC	WA4848076
Elanus leucurus (Vieillot, 1818)	White-tailed Kite	Gavião-Peneira	-	PRE	GR	L	ND	-	RES	LC	LC	WA4511705
Rostrhamus sociabilis (Vieillot, 1817)	Snail Kite	Gavião-Caramujeiro	-	INS	GR	L	ND	-	MPR	LC	LC	WA4734011
Harpagus diodon (Temminck, 1823)	Rufous-thighed Kite	Gavião-Bombachinha	-	INS	MH	M	DP	-	MGT	LC	LC	WA4398137
Ictinia plumbea (Gmelin, 1788)	Plumbeous Kite	Sovi	-	INS	A	M	SD	-	MPR	LC	LC	WA4588645
Circus buffoni (Gmelin, 1788)	Long-winged Harrier	Gavião-do-Banhado	-	PRE	GR	M	ND	-	RES	LC	LC	-
Accipiter striatus Vieillot, 1808	Sharp-shinned Hawk	Tauató-Miúdo	-	PRE	US/MH/CA/A	L	SD	-	RES	LC	LC	WA4398151
Heterospizias meridionalis (Latham, 1790)	Savanna Hawk	Gavião-Caboclo	-	GEN	GR	L	ND	-	RES	LC	LC	WA3678436
Urubitinga urubitinga (Gmelin, 1788)	Great Black Hawk	Gavião-Preto	-	GEN	GR/CA	M	SD	-	RES	LC	LC	WA4398113
Rupornis magnirostris (Gmelin, 1788)	Roadside Hawk	Gavião-Carijó	-	GEN	GR/US/MH	L	ND	-	RES	LC	LC	WA4715022
Geranoaetus albicaudatus (Vieillot, 1816)	White-tailed Hawk	Gavião-de-Rabo-Branco	-	PRE	GR	L	ND	-	RES	LC	LC	IAP (2006)
Buteo brachyurus Vieillot, 1816	Short-tailed Hawk	Gavião-de-Cauda-Curta	-	PRE	CA	M	SD	-	RES	LC	LC	WA2501012
Buteo swainsoni Bonaparte, 1838	Swainson's Hawk	Gavião-Papa-Gafanhoto	-	PRE	GR/US/MH/CA/A	M	ND	-	MGT	DD	LC	WA3592037
Strigiformes Wagler, 1830												
Tytonidae Mathews, 1912												
Tyto furcata (Temminck, 1827)	American Barn Owl	Suindara	-	PRE	GR	L	ND	-	RES	LC	LC	WA4726389
Strigidae Leach, 1820												
Megascops choliba (Vieillot, 1817)	Tropical Screech-Owl	Corujinha-do-Mato	-	INS	US	L	SD	-	RES	LC	LC	WA4468479
Strix virgata (Cassin, 1849)	Mottled Owl	Coruja-do-Mato	-	PRE	GR	M	SD	-	RES	LC	LC	-
Athene cunicularia (Molina, 1782)	Burrowing Owl	Coruja-Buraqueira	-	PRE	GR	M	ND	-	RES	LC	LC	WA2272142
Trogoniformes A.O.U., 1886												
Trogonidae Lesson, 1828												
Trogon surrucura Vieillot, 1817	Surucua Trogon	Surucuá-Variado	-	INS	MH	M	DP	-	RES	LC	LC	WA4279313
Coraciiforme Forbes, 1844												
Momotidae Gray, 1840												

Taxon Name	English Name	Portuguese Name	MN	DIE	FOR	S	FD	END	MIG	PR	BR	TEST
Baryphthengus ruficapillus (Vieillot, 1818)	Ruffous-capped Motmot	Juruva	-	INS	GR	M	DP	END	RES	LC	LC	WA5038494
Alcedinidae Rafinesque, 1815												
Megaceryle torquata (Linnaeus, 1766)	Ringed Kingfisher	Martim-Pescador-Grande	1	FIS	WBS	L	SD	-	RES	LC	LC	WA2654259
Chloroceryle amazona (Latham, 1790)	Amazon Kingfisher	Martim-Pescador-Verde	-	FIS	WBS	L	ND	-	RES	LC	LC	WA4763817
Chloroceryle americana (Gmelin, 1788)	Green Kingfisher	Martim-Pescador-Pequeno	-	FIS	WBS	L	ND	-	RES	LC	LC	WA4621687
Galbuliformes Fürbringer, 1888												
Bucconidae Horsfield, 1821												
Nystalus chacuru (Vieillot, 1816)	White-eared Puffbird	João Bobo	-	INS	GR/US/MH	M	SD	-	RES	LC	LC	WA4285248
Piciformes Meyer & Wolf, 1810												
Ramphastidae Vigors, 1825												
Ramphastos toco Statius Muller, 1776	Toco Toucan	Tucano-Toco	-	FRU	CA	M	SD	-	RES	LC	LC	WA4736731
Pteroglossus bailloni (Vieillot, 1819)	Saffron Toucanet	Araçari-Banana	-	FRU	MH	H	DP	END	RES	VU	NT	WA4285242
Pteroglossus castanotis Gould, 1834	Chestnut-eared Aracari	Araçari-Castanho	2	FRU	MH	H	SD	-	RES	LC	LC	WA4508124
Picidae Leach, 1820												
Picumnus temminckii Lafresnaye, 1845	Ochre-collared Piculet	Pica-Pauzinho-Anão-de-Coleira	2	INS	US	M	DP	END	RES	LC	LC	WA4621682
Melanerpes candidus (Otto, 1796)	White Woodpecker	Pica-Pau-Branco	-	FRU	MH	L	SD	-	RES	LC	LC	WA4279304
Melanerpes flavifrons (Vieillot, 1818)	Yellow-fronted Woodpecker	Benedito-de-Testa-Amarela	-	OMN	US/MH	M	SD	END	RES	LC	LC	WA4726411
Veniliornis spilogaster (Wagler, 1827)	White-spotted Woodpecker	Picapauzinho-Verde-Carijó	1	INS	US/MH	M	DP	-	RES	LC	LC	WA4693712
Campephilus robustus (Lichtenstein, 1818)	Robust Woodpecker	Pica-Pau-Rei	-	INS	MH	M	DP	END	RES	LC	LC	WA4282372
Dryocopus lineatus (Linnaeus, 1766)	Lineated Woodpecker	Pica-Pau-de-Banda-Branca	1	INS	MH	L	ND	-	RES	LC	LC	WA4508128
Celeus flavescens (Gmelin, 1788)	Blond-crested Woodpecker	Pica-Pau-de-Cabeça-Amarela	1	INS	MH	M	SD	-	RES	LC	LC	WA4630208
Colaptes melanochloros (Gmelin, 1788)	Green-barred Woodpecker	Pica-Pau-Verde-Barrado	-	INS	US/MH	L	SD	-	RES	LC	LC	WA4508127
Colaptes campestris (Vieillot, 1818)	Campo Flicker	Pica-Pau-do-Campo	-	INS	GR	L	ND	-	RES	LC	LC	-
Falconiformes Bonaparte, 1831												
Falconidae Leach, 1820												
Herpetotheres cachinnans (Linnaeus, 1758)	Laughing Falcon	Acauã	-	PRE	GR/US/MH	L	ND	-	RES	LC	LC	WA4726746
Micrastur semitorquatus (Vieillot, 1817)	Collared Forest-Falcon	Falcão-Relógio	-	PRE	GR	M	SD	-	RES	LC	LC	WA4726716
Caracara plancus (Miller, 1777)	Crested Caracara	Carcará	-	SCA	GR	L	ND	-	RES	LC	LC	WA4637394
Milvago chimachima (Vieillot, 1816)	Yellow-headed Caracara	Carrapateiro	-	GEN	GR	L	ND	-	RES	LC	LC	WA4611898

Taxon Name	English Name	Portuguese Name	MN	DIE	FOR	S	FD	END	MIG	PR	BR	TEST
Falco sparverius Linnaeus, 1758	American Kestrel	Quiri-Quiri	-	INS	GR	L	ND	-	RES	LC	LC	WA4621726
Falco rufigularis Daudin, 1800	Bat Falcon	Cauré	-	PRE	US/MH/A	L	DP	-	RES	LC	LC	WA4734224
Falco femoralis Temminck, 1822	Aplomado Falcon	Falcão-de-Coleira	-	OMN	GR/US	L	ND	-	RES	LC	LC	WA4714544
Falco peregrinus Tunstall, 1771	Peregrine Falcon	Falcão-Peregrino	-	PRE	GR/US/MH/CA/A	M	ND	-	MGT	LC	LC	WA4637397
Psittaciforme Wagler, 1830												
Psittacidae Rafinesque, 1815												
Myiopsitta monachus (Boddaert, 1783)	Monk Parakeet	Caturrita	-	GRA	MH	L	ND	-	RES	LC	LC	WA4398125
Brotogeris chiriri (Vieillot, 1818)	Yellow-chevroned Parakeet	Periquito-de-Encontro-Amarelo	-	FRU	GR/US	M	SD	-	RES	LC	LC	WA3454805
Pionus maximiliani (Kuhl, 1820)	Scaly-headed Parrot	Maitaca-Verde	-	GRA	MH	M	SD	-	RES	LC	LC	-
Amazona aestiva (Linnaeus, 1758)	Turquoise-fronted Parrot	Papagaio-Verdadeiro	-	HER	MH	M	ND	-	RES	LC	NT	WA4622235
Psittacara leucophthalmus (Statius Muller, 1776)	White-eyed Parakeet	Periquitão-Maracanã	-	HER	MH	L	SD	-	RES	LC	LC	WA3713901
Passeriformes Linnaeus, 1758												
Thamnophilidae Swainson, 1824												
Dysithamnus mentalis (Temminck, 1823)	Plain Antvireo	Choquinha-Lisa	2	INS	US/MH	M	SD	-	RES	LC	LC	WA4620084
Herpsilochmus longirostris Pelzeln, 1868	Large-billed Antwren	Chorozinho-de-Bico-Comprido	-	INS	MH	M	DP	-	RES	LC	LC	WA4714998
Thamnophilus doliatus (Linnaeus, 1764)	Barred Antshrike	Choca-Barrada	3	INS	MH	L	SD	-	RES	LC	LC	WA3541016
Thamnophilus caerulescens Vieillot, 1816	Variable Antshrike	Choca-da-Mata	-	INS	MH	L	SD	-	RES	LC	LC	WA4508123
Mackenziaena severa (Lichtenstein, 1823)	Tufted Antshrike	Borralhara	-	INS	US	M	SD	END	RES	LC	LC	IAP (2006)
Conopophagidae Sclater & Salvin, 1873												
Conopophaga lineata (Wied, 1831)	Rufous Gnateater	Chupa-Dente	-	INS	GR	M	SD	-	RES	LC	LC	WA4971271
Dendrocolaptidae Gray, 1840												
Dendrocolaptes platyrostris Spix, 1825	Planalto Woodcreeper	Arapaçu-Grande	1	INS	GR/US	M	SD	-	RES	LC	LC	WA4540800
Campylorhamphus trochilirostris (Lichtenstein, 1820)	Red-billed Scythebill	Arapaçu-Beija-Flor	-	INS	US	H	SD	-	RES	VU	LC	WA4611877
Furnariidae Gray, 1840												
Furnarius rufus (Gmelin, 1788)	Rufous Hornero	João-de-Barro	2	INS	GR	L	ND	-	RES	LC	LC	WA4726758
Lochmias nematura (Lichtenstein, 1823)	Sharp-tailed Streamcreeper	João-Porca	-	INS	GR	M	DP	-	RES	LC	LC	WA4630204
Automolus leucophthalmus (Wied, 1821)	White-eyed Foliage-gleaner	Barranqueiro-de-Olho-Branco	-	INS	US	M	DP	END	RES	LC	LC	IAP (2006)

Taxon Name	English Name	Portuguese Name	MN	DIE	FOR	S	FD	END	MIG	PR	BR	TEST
Certhiaxis cinnamomeus (Gmelin, 1788)	Yellow-chinned Spinetail	Curutié	-	INS	US/MH/CA	M	ND	-	RES	LC	LC	WA4598479
Synallaxis albescens Temminck, 1823	Pale-breasted Spinetail	Ui-Pí	-	INS	US	L	ND	-	RES	LC	LC	-
Synallaxis frontalis Pelzeln, 1859	Sooty-fronted Spinetail	Petrim	-	INS	US	L	SD	-	RES	LC	LC	WA4621715
Pipridae Rafinesque, 1815												
Chiroxiphia caudata (Shaw & Nodder 1793)	Swallow-tailed Manakin	Tangará	-	OMN	US/MH	L	DP	END	RES	LC	LC	IAP (2006)
Manacus manacus (Linnaeus, 1766)	White-bearded Manakin	Rendeira	6	FRU	US	L	SD	-	RES	LC	LC	WA4559426
Pipra fasciicauda Hellmayr, 1906	Band-tailed Manakin	Uirapuru-Laranja	3	FRU	US/MH	M	DP	-	RES	LC	LC	WA4867636
Tityridae Gray, 1840												
Tityra inquisitor (Lichtenstein, 1823)	Black-crowned Tityra	Anambé-Branco-de-Boche-cha-Parda	-	FRU	MH	M	SD	-	RES	LC	LC	WA4540822
Tityra cayana (Linnaeus, 1766)	Black-tailed Tityra	Anambé-Branco-de-Rabo-Preto	-	FRU	US/MH	M	SD	-	RES	LC	LC	WA5199179
Pachyramphus viridis (Vieillot, 1816)	Green-backed Becard	Caneleiro-Verde	-	INS	US/MH	M	SD	-	RES	LC	LC	-
Pachyramphus validus (Lichtenstein, 1823)	Crested Becard	Caneleiro-de-Chapéu-Preto	3	INS	US/MH	M	DP	-	MPR	LC	LC	WA4567869
Platyrinchidae Bonaparte, 1854												
Platyrinchus mystaceus Vieillot, 1818	White-throated Spadebill	Patinho	1	INS	US	M	SD	-	RES	LC	LC	WA4403255
Rhynchocyclidae Berlepsch, 1907												
Leptopogon amaurocephalus Tschudi, 1846	Sepia-capped Flycatcher	Cabeçudo	5	INS	US/MH	M	SD	-	RES	LC	LC	WA4158095
Corythopis delalandi (Lesson, 1830)	Southern Antpipit	Estalador	-	INS	GR	M	DP	-	RES	LC	LC	WA4954675
Tolmomyias sulphurescens (Spix, 1825)	Yellow-olive Flycatcher	Bico-Chato-de-Orelha-Preta	-	INS	MH	M	SD	-	RES	LC	LC	-
Todirostrum cinereum (Linnaeus, 1766)	Common Tody-Flycatcher	Ferreirinho-Relógio	2	INS	US/MH/CA	L	ND	-	RES	LC	LC	WA4590523
Poecilotriccus plumbeiceps (Lafresnaye, 1846)	Ochre-faced Tody-Flycatcher	Tororó	-	INS	US	M	SD	-	RES	LC	LC	IAP (2006)
Hemitriccus margaritaceiventer (d'Orbigny & Lafresnaye, 1837)	Pearly-vented Tody-tyrant	Sebinho-de-Olho-de-Ouro	1	INS	MH	M	ND	-	RES	LC	LC	WA4621705
Tyrannidae Vigors, 1825												
Euscarthmus meloryphus Wied, 1831	Tawny-crowned Pygmy-Tyrant	Barulhento	1	INS	US	L	ND	-	RES	LC	LC	WA4611918
Camptostoma obsoletum (Temminck, 1824)	Southern Beardless-Tyrannulet	Risadinha	1	INS	MH	L	ND	-	RES	LC	LC	WA4557838
Elaenia flavogaster (Thunberg, 1822)	Yellow-bellied Elaenia	Guaracava-de-Barriga-Amarela	-	OMN	MH	L	ND	-	RES	LC	LC	WA4611894

Taxon Name	English Name	Portuguese Name	MN	DIE	FOR	S	FD	END	MIG	PR	BR	TEST
Elaenia spectabilis Pelzeln, 1868	Large Elaenia	Guaracava-Grande	-	OMN	CA	L	SD	-	MPR	LC	LC	WA4508144
Elaenia parvirostris Pelzeln, 1868	Small-billed Elaenia	Tuque-Pium	-	INS	US/MH/CA	L	SD	-	MPR	LC	LC	-
Myiopagis caniceps (Swainson, 1835)	Gray Elaenia	Guaracava-Cinzenta	-	INS	CA	M	DP	-	RES	LC	LC	-
Myiopagis viridicata (Vieillot, 1817)	Greenish Elaenia	Guaracava-de-Crista-Alaranjada	1	INS	MH/CA	M	SD	-	MPR	LC	LC	WA4710091
Capsiempis flaveola (Lichtenstein, 1823)	Yellow Tyrannulet	Marianinha-Amarela	-	INS	MH	L	ND	-	RES	LC	LC	WA4715008
Legatus leucophaius (Vieillot, 1818)	Piratic Flycatcher	Bem-te-vi-Pirata	-	FRU	CA	L	SD	-	MPR	LC	LC	WA4596823
Myiarchus ferox (Gmelin, 1789)	Short-crested Flycatcher	Maria-Cavaleira	8	OMN	US	L	SD	-	RES	LC	LC	WA4598484
Pitangus sulphuratus (Linnaeus, 1766)	Great Kiskadee	Bem-te-vi	3	OMN	GR	L	ND	-	MPR	LC	LC	WA2593313
Machetornis rixosa (Vieillot, 1819)	Cattle Tyrant	Suiriri-Cavaleiro	-	INS	GR	L	ND	-	RES	LC	LC	WA4726692
Myiodynastes maculatus (Statius Muller, 1776)	Streaked Flycatcher	Bem-te-vi-Rajado	-	OMN	MH	L	SD	-	MPR	LC	LC	WA4665550
Megarynchus pitangua (Linnaeus, 1766)	Boat-billed Flycatcher	Neinei	-	INS	MH	L	ND	-	RES	LC	LC	WA4630214
Myiozetetes similis (Spix, 1825)	Social Flycatcher	Bentevizinho-de-Penacho-Vermelho	1	OMN	MH	L	ND	-	RES	LC	LC	WA4567781
Tyrannus melancholicus Vieillot, 1819	Tropical Kingbird	Suiriri	2	INS	MH/CA	L	ND	-	MPR	LC	LC	WA4559421
Tyrannus savana Daudin, 1802	Southern Fork-tailed Flycatcher	Tesourinha	-	INS	GR/US	L	ND	-	MPR	LC	LC	WA4559419
Empidonomus varius (Vieillot, 1818)	Variegated Flycatcher	Peitica	-	INS	MH	L	SD	-	MPR	LC	LC	WA4588648
Arundinicola leucocephala (Linnaeus, 1764)	White-headed Marsh Tyrant	Freirinha	-	INS	GR/US	M	ND	-	RES	LC	LC	WA2444988
Fluvicola albiventer (Spix, 1825)	Black-backed Water Tyrant	Lavadeira-de-Mascara-Branca	-	INS	GR	M	ND	-	MPR	LC	LC	-
Fluvicola nengeta (Linnaeus, 1766)	Masked Water-Tyrant	Lavadeira-Mascarada	-	INS	GR	L	ND	-	RES	LC	LC	WA4607351
Pyrocephalus rubinus (Boddaert, 1783)	Vermilion Flycatcher	Principe	-	INS	US/MH	L	ND	-	MPR	LC	LC	WA4726611
Myiophobus fasciatus (Statius Muller, 1776)	Bran-colored Flycatcher	Filipe	1	INS	US	L	ND	-	MPR	LC	LC	WA4715020
Cnemotriccus fuscatus (Wied, 1831)	Fuscous Flycatcher	Guaracavuçu	4	INS	GR/US	L	SD	-	RES	LC	LC	WA4620952
Lathrotriccus euleri (Cabanis, 1868)	Euler's Flycatcher	Enferrujado	-	INS	US	M	SD	-	MPR	LC	LC	-
Satrapa icterophrys (Vieillot, 1818)	Yellow-browed Tyrant	Suiriri-Pequeno	-	INS	US	L	ND	-	RES	LC	LC	WA4403241
Xolmis velatus (Lichtenstein, 1823)	White-rumped Monjita	Noivinha-Branca	-	INS	GR	M	ND	-	RES	LC	LC	-
Vireonidae Swainson, 1837												
Cyclarhis gujanensis (Gmelin, 1789)	Rufous-browed Peppershrike	Pitiguari	1	INS	US/MH	L	SD	-	RES	LC	LC	WA4508121

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Vireo chivi (Vieillot, 1817)	Chivi Vireo	Juruviara	-	INS	CA	L	DP	-	MPR	LC	LC	WA4575000
Corvidae Leach, 1820												
Cyanocorax chrysops (Vieillot, 1818)	Plush-crested Jay	Gralha-Picaça	1	INS	US/MH/CA	L	SD	-	RES	LC	LC	WA4590525
Hirundinidae Rafinesque, 1815												
Pygochelidon cyanoleuca (Vieillot, 1817)	Blue-and-white Swallow	Andorinha-Pequena-de-Casa	-	INS	MH	L	ND	-	RES	LC	LC	-
Stelgidopteryx ruficollis (Vieillot, 1817)	Southern Rough-winged Swallow	Andorinha-Serradora	1	INS	MH	L	ND	-	MPR	LC	LC	-
Progne tapera (Linnaeus, 1766)	Brown-chested Martin	Andorinha-do-Campo	-	INS	US/A	L	ND	-	MPR	LC	LC	-
Progne chalybea (Gmelin, 1789)	Gray-breasted Martin	Andorinha-Grande	-	INS	GR/US/MH/ CA/A	L	ND	-	MPR	LC	LC	WA4540775
Tachycineta albiventer (Boddaert, 1783)	White-winged Swallow	Andorinha-do-Rio	-	INS	US	L	ND	-	RES	LC	LC	WA4726612
Troglodytidae Swainson, 1831												
Troglodytes musculus Naumann, 1823	Southern House Wren	Corruíra	3	INS	US	L	ND	-	RES	LC	LC	WA4557840
Cantorchilus leucotis (Lafresnaye, 1845)	Buff-breasted Wren	Garrinchão-de-Barriga-Vermelha	-	INS	US	L	SD	-	RES	LC	LC	-
Donacobiidae Aleixo & Pacheco, 2006												
Donacobius atricapilla (Linnaeus, 1766)	Black-capped Donacobius	Japacanim	-	INS	US/MH	M	ND	-	RES	LC	LC	WA4620889
Turdidae, Rafinesque, 1815												
Turdus leucomelas Vieillot, 1818	Pale-breasted Thrush	Sabiá-Barranco	8	INS	GR	L	SD	-	RES	LC	LC	WA4726759
Turdus rufiventris Viellot, 1818	Rufous-bellied Thrush	Sabiá-Laranjeira	-	OMN	GR	L	ND	-	RES	LC	LC	WA1798610
Turdus albicolis Viellot, 1818	White-Necked Thrush	Sabiá-Coleira	-	INS	GR	M	SD	-	RES	LC	LC	-
Turdus amaurochalinus Cabanis, 1850	Creamy-bellied Thrush	Sabiá-Poca	4	FRU	MH/CA	L	ND	-	MPR	LC	LC	WA4727729
Mimidae Bonaparte, 1853												
Mimus saturninus (Lichtenstein, 1823)	Chalk-browed Mockingbird	Sabiá-do-Campo	-	INS	GR	L	ND	-	RES	LC	LC	WA4567834
Passeridae Rafinesque, 1815												
Passer domesticus (Linnaeus, 1758)	House Sparrow	Pardal	7	GRA	GR/US	L	ND	-	RES	LC	LC	WA1885992
Fringillidae Leach, 1820												
Euphonia chlorotica (Linnaeus, 1766)	Purple-throated Euphonia	Fim-Fim	2	FRU	CA	L	ND	-	RES	LC	LC	WA4649886
Euphonia violacea (Linnaeus, 1758)	Violaceous Euphonia	Gaturamo-Verdadeiro	2	FRU	MH	L	SD	-	RES	LC	LC	WA4649884
Passerellidae Cabanis & Heine, 1850												
Ammodramus humeralis (Bosc, 1792)	Grassland Sparrow	Tico-Tico-do-Campo	-	GRA	GR	L	ND	-	RES	LC	LC	WA4652568

Taxon Name	English Name	Portuguese Name	MN	DIE	FOR	S	FD	END	MIG	PR	BR	TEST
Arremon polionotus Bonaparte, 1850	Gray-backed Sparrow	Tico-Tico-de-Costas-Cinza	4	OMN	GR	M	SD	-	RES	LC	LC	WA3391971
Icteridae Vigors, 1825												
Leistes superciliaris (Bonaparte, 1850)	White-browed Meadowlark	Polícia-Inglesa-do-Sul	-	OMN	GR	L	ND	-	RES	LC	LC	WA4652537
Cacicus haemorrhous (Linnaeus, 1766)	Red-rumped Cacique	Guaxe	25	INS	MH	L	SD	-	RES	LC	LC	WA4486158
Icterus pyrrhopterus (Vieillot, 1819)	Variable Oriole	Encontro	-	INS	MH/CA	M	ND	-	RES	LC	LC	WA4726833
Molothrus oryzivorus (Gmelin, 1788)	Giant Cowbird	Iraúna-Grande	-	FRU	GR/CA	L	SD	-	RES	LC	LC	WA4557845
Molothrus bonariensis (Gmelin, 1789)	Shiny Cowbird	Chupim	1	INS	GR	L	ND	-	RES	LC	LC	WA4508913
Agelaioides badius (Vieillot, 1819)	Grayish Baywing	Asa-de-Telha	-	INS	GR	L	ND	-	RES	LC	LC	WA4665598
Chrysomus ruficapillus (Vieillot, 1819)	Chestnut-capped Blackbird	Garibaldi	-	GRA	GR	L	ND	-	RES	LC	LC	WA4726829
Parulidae Wetmore et al. 1947												
Geothlypis aequinoctialis (Gmelin, 1789)	Masked Yellowthroat	Piá-Cobra	-	INS	US	L	ND	-	RES	LC	LC	WA4596829
Setophaga pitiayumi (Vieillot, 1817)	Tropical Parula	Mariquita	1	INS	CA	M	SD	-	RES	LC	LC	WA3394944
Myiothlypis flaveola Baird, 1865	Flavescent Warbler	Canário-do-Mato	-	INS	GR	M	SD	-	RES	LC	LC	WA4867637
Basileuterus culicivorus (Deppe, 1830)	Golden-crowned Warbler	Pula-Pula	8	INS	US	M	SD	-	RES	LC	LC	WA4611883
Cardinalidae Ridgway, 1901												
Cyanoloxia brissonii (Lichtenstein, 1823)	Ultramarine Grosbeak	Azulão	1	FRU	GR/US	M	ND	-	RES	LC	LC	WA4403217
Thraupidae Cabanis, 1847												
Nemosia pileata (Boddaert, 1783)	Hooded Tanager	Saíra-de-Chapéu-Preto	-	INS	MH	L	ND	-	RES	LC	LC	WA4611843
Hemithraupis guira (Linnaeus, 1766)	Guira Tanager	Saíra-de-Papo-Preto	-	INS	CA	L	SD	-	RES	LC	LC	WA3495783
Tersina viridis (Illiger, 1811)	Swallow Tanager	Saí-Andorinha	-	FRU	MH	L	SD	-	MPR	LC	LC	WA4521596
Dacnis cayana (Linnaeus, 1766)	Blue Dacnis	Saí-Azul	3	OMN	CA	L	SD	-	RES	LC	LC	WA4611861
Saltator similis d'Orbigny & Lafresnaye, 1837	Green-winged Saltator	Trinca-Ferro	1	INS	US	L	SD	-	RES	LC	LC	WA4567910
Saltator fuliginosus (Daudin, 1800)	Black-throated Grosbeak	Bico-de-Pimenta	-	INS	MH	M	DP	END	RES	LC	LC	WA4403244
Coereba flaveola (Linnaeus, 1758)	Bananaquit	Cambacica	-	NEC	US	L	ND	-	RES	LC	LC	WA4736704
Volatinia jacarina (Linnaeus, 1766)	Blue-black Grassquit	Tiziu	-	OMN	GR	L	ND	-	RES	LC	LC	WA4652560
Trichothraupis melanops (Vieillot, 1818)	Black-goggled Tanager	Tiê-de-Topete	1	INS	GR/US	M	SD	-	RES	LC	LC	WA4328244
Coryphospingus cucullatus (Statius Muller, 1776)	Red-crested Finch	Tico-Tico-Rei	-	OMN	US	L	ND	-	RES	LC	LC	WA4652547
Tachyphonus coronatus (Vieillot, 1822)	Ruby-crowned Tanager	Tiê-Preto	4	INS	MH/CA	L	SD	END	RES	LC	LC	WA4496678
Sporophila collaris (Boddaert, 1783)	Rusty-collared Seedeater	Coleiro-do-Brejo	-	GRA	US	L	ND	-	RES	LC	LC	-

Taxon Name	English Name	Portuguese Name	MN	DIE	FOR	S	FD	END	MIG	PR	BR	TEST
Sporophila caerulescens (Vieillot, 1823)	Double-collared Seedeater	Coleirinho	1	GRA	GR/US	L	ND	-	MPR	LC	LC	WA4652562
Conirostrum speciosum (Temminck, 1824)	Chestnut-vented Conebill	Figuinha-de-Rabo-Castanho	2	INS	GR	L	ND	-	RES	LC	LC	WA3454804
Sicalis flaveola (Linnaeus, 1766)	Saffron Finch	Canário-da-Terra	18	GRA	US	L	ND	-	RES	LC	LC	WA4559414
Sicalis luteola (Sparrman, 1789)	Grassland Yellow-Finch	Tipio	-	GRA	US	L	ND	-	RES	LC	LC	-
Pipraeidea melanonota (Vieillot, 1819)	Fawn-breasted Tanager	Saíra-Viúva	-	OMN	CA	L	ND	-	RES	LC	LC	WA4282414
Cissopis leverianus (Gmelin, 1788)	Magpie Tanager	Tietinga	-	FRU	US/MH	L	SD	-	RES	LC	LC	WA4620172
Thraupis sayaca (Linnaeus, 1766)	Sayaca Tanager	Sanhaço-Cinzento	3	OMN	CA	L	ND	-	RES	LC	LC	WA4557843

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