

Updated bird list of Lagoa do Peixe National Park, one of the most important South American wetlands

Lista atualizada de aves do Parque Nacional da Lagoa do Peixe, uma das áreas úmidas mais importantes da América do Sul

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Abstract: The Lagoa do Peixe National Park is an important federal protected area for migratory and resident birds located on the middle coast of the state of Rio Grande do Sul, southern Brazil. Nevertheless, the ornithological fauna of the Lagoa do Peixe National Park is still underestimated. The main goal of this article is to review all available ornithological records and update the list of species that occur in the Park. Furthermore, the species with confirmed records in the National Park were also classified based on their occurrence, diet, main *habitat* associated, conservation status, and populational trends, aiming to fully characterize the ornithological fauna of the Protected Area. The primary and secondary lists recorded 349 species for the area, including 74 migratory and 13 under some level of threat. Invertebrates represented the main prey item of the bird species analyzed. Most bird species were associated with forest environments, with a relevant number of species exclusively dependent of wetland and coastal *habitats*. The number of species recorded reinforces the importance of the area for the conservation of birds in South America. Furthermore, the list can be an important tool for the development of conservation and management actions, environmental education, and science communication.

Keywords: Conservation. Mostardas peninsula. Ornithology. Species list. Tavares.

Resumo: O Parque Nacional da Lagoa do Peixe é uma importante unidade de conservação federal para aves migratórias e residentes, localizado na costa média do estado do Rio Grande do Sul, Sul do Brasil. Apesar disso, a fauna ornitológica da região ainda é subestimada. O principal objetivo deste trabalho foi revisar todos os registros ornitológicos da região e atualizar a lista de espécies que ocorrem no Parque. Além disso, as espécies catalogadas foram classificadas de acordo com a sua ocorrência, dieta, principal hábitat relacionado, *status* de conservação e tendência populacional, buscando caracterizar por completo a ornitofauna da unidade de conservação. As listas primárias e secundárias totalizaram, juntas, 349 espécies diferentes, incluindo 74 espécies migratórias e 13 sob algum grau de ameaça. Os invertebrados representaram o principal item alimentar da dieta das aves analisadas. A maior parte das aves está relacionada ao hábitat florestal, apesar de um número relevante de espécies ser exclusivamente dependente de áreas úmidas e regiões costeiras. O número de espécies registrado reforça a importância da área para a conservação de aves que ocorrem na América do Sul. Além disso, a lista pode ser uma importante ferramenta para ações de conservação e manejo, educação e turismo ambiental.

Palavras-chave: Conservação. Península de Mostardas. Ornitologia. Lista de espécies. Tavares.

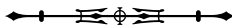
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INTRODUCTION

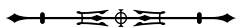
Since the early 19th century, naturalists found themselves attracted to the study and collection of the ornithological fauna from the state of Rio Grande do Sul (RS) (Belton, 1984; Franz et al., 2018). August Saint Hilaire, a French explorer, was probably the first to collect and catalog the specimens of birds from the state, between 1820 and 1821. Nevertheless, very little information about the date, location, and specimens' conditions can be obtained from the collection deposited in European museums, such as the *Muséum National d'Histoire Naturelle* in Paris (Belton, 1984; Vanzolini, 1996; Aleixo & Straube, 2007; Alves et al., 2008). The first well-recorded and detailed explorations of the ornithological fauna of the state occurred during the end of the 1800s and the beginning of the 20th century by independent naturalists, many of them from European origins: Hermann von Ihering, Ernest Garbe, Rudolf Gliesch, and Emil Kaempfer (Belton, 1984; Aleixo & Straube, 2007). These naturalists expanded the species list of the state and explored many different regions of RS, mainly the city of Pelotas and the southern part of the state, the northeastern shore of RS or the highly elevated Araucaria Forest, in the Serra region, with specimens deposited in many museums abroad or inside Brazil (Belton, 1984).

The Mostardas peninsula was always a region of interest for explorers or naturalists who studied the coast of the state, but its ornithological fauna remained understudied and underestimated until the beginning of the 1960s and 70s (Bencke et al., 2007; Harrison et al., 2013). In those decades, ornithologists such as Helmut Sick and William Belton started to raise attention to the importance of areas such as Lagoa do Peixe for migratory avian species, mainly wading birds, that often were reported feeding and resting in the inlet of the lagoon (Belton, 1984, 1985, 1994; Sick, 1983, 1997). The conservation movement of the state, associated with international pressure from organizations towards the conservation of important wetlands, promoted the creation, in 1986 of the Lagoa do Peixe National

Park (LPNP), a federal area of conservation destined to protect the bird species that are found in the area and their associated environments (Brasil, 1986). The first ecological report and studies in the area were conducted by Resende and Leeuwenberg (1987), defining the area as one of the most important wetlands in South Brazil and proving the relevance of its conservation to the populations of wading birds that were under severe decline and the threat of extinction.

Nevertheless, the first official list of birds of LPNP was only published in 1995, a few years earlier than the first management plan of the park, in 1999, reporting 181 different bird species for the area, including twenty migratory species (Nascimento, 1995; Knak, 1999). Despite inclusions of bird species in the list being made on several occasions (i.e. Nascimento, n. d.; Maurício & Bencke, 2000; Mohr, 2003, 2004; Mohr et al., 2005; Bencke et al., 2007; Dias et al., 2010; Pereira & Poerschke, 2010; Harrison et al., 2013; Meller et al., 2020), no complete updated ornithological species list has been made available since the first official list. The Lagoa do Peixe is an important ecosystem on the middle coast of RS and it is involved in political and local disputes since its creation, with unresolved conflicts until today (Moraes, 2009; Benedetti, 2018). The presence of ecological and ornithological studies in the area can be an important subsidy for preservation and conservation actions, that involve the community, researchers, and park staff (Rodrigues et al., 2006). An updated list of bird species, reuniting all the species already described for the park can be used as an important tool for better practices in the area (Keller & Bollmann, 2004; Moreno et al., 2007; Rojas-Soto et al., 2009).

In this way, this paper aims to provide a complete and updated list of bird species recorded at the LPNP from multiple sources, from the specimens cataloged at museums, to verified records of species only documented through images and sounds from citizen science databases. The paper also provides for the first time a list organizing species that were already reported for the park but are



probably incorrectly identified and reported and a list of species that could potentially be reported inside the area of the LPNP in the future. Furthermore, this work also aims to classify the species that are currently reported for the area concerning their conservation status, *habitat* type, food guild, and migratory status, providing a full assessment of the ornithological fauna present in the area.

METHODS

STUDY AREA

The Lagoa do Peixe National Park (LPNP) (31° 15' 19" S, 50° 58' 19" W) is a conservation unit and protected reserve of 36.7 thousand hectares on the central coast of the state of Rio Grande do Sul (RS), Southern Brazil, named after the main lagoon inside the area, about 40 km long, 1 km wide and 10 to 60 cm deep, called Lagoa do Peixe (Fedrizzi

& Carlos, 2011) (Figure 1). The lagoon is connected to the sea during most of the year and has different subdivisions called 'lagamares' by the communities nearby (Knak, 1999) (Figure 1). The area where the lagoon meets the sea is locally known as 'Barra', an area that forms a rich ecotone because of the interaction between fresh and salt water, attracting many migratory and shorebirds to the region, such as terns, cormorants, and other waterbirds (Attrill & Rundle, 2002; Fedrizzi & Carlos, 2011; Basset et al., 2013). Nevertheless, the reserve presents a high variability of landscapes, from herbaceous and low vegetation grasslands, sandy formations, and dunes to flooded grasslands, swamps, and other wet areas maintained by the rain cycle of the region (Knak, 1999). Moreover, the LPNP also contains an area of natural Atlantic Rainforest, with the presence of invasive alien trees (*Pinus* spp.) in all areas of the park (Signori, 2018).

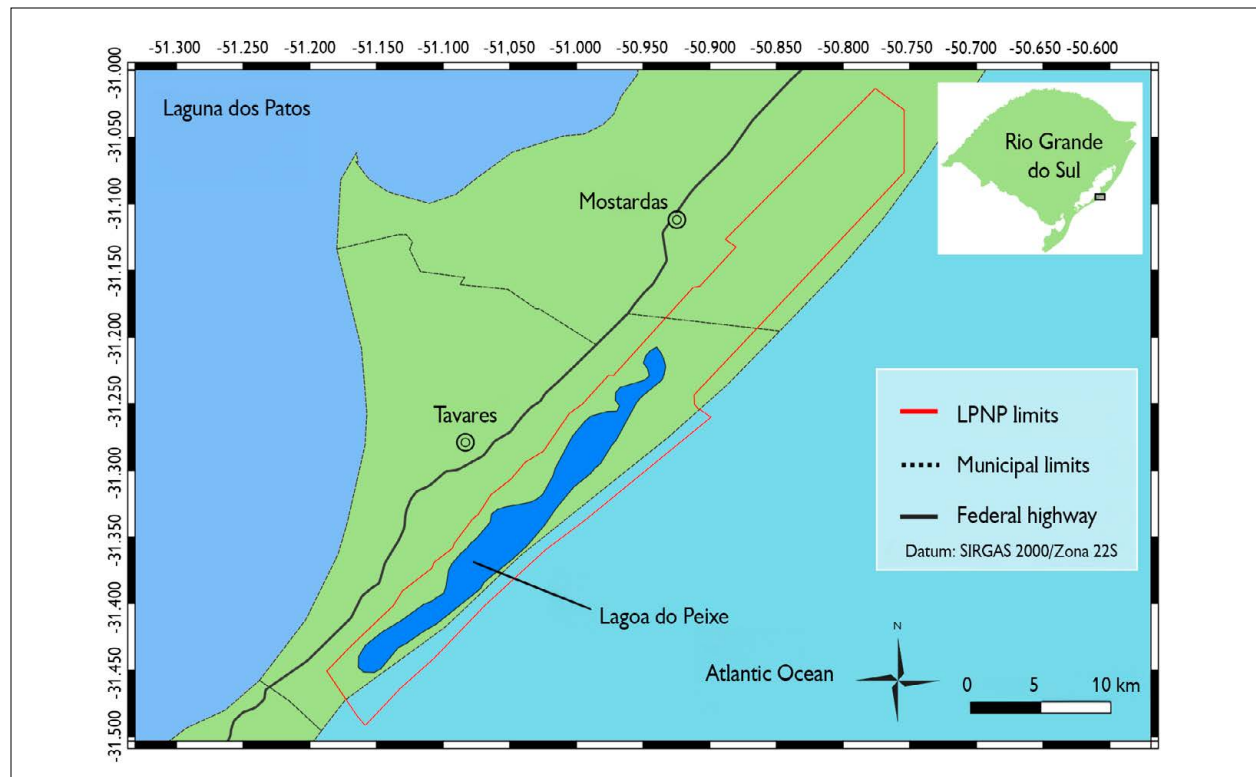


Figure 1. Map of the Lagoa do Peixe National Park (LPNP) region, between the cities of Mostardas and Tavares, on the central coast of the state of Rio Grande do Sul, Brazil. Map: H. C. Delfino (2023).

The park is one of the most important places for migratory shorebirds, especially the ones from the Nearctic region, in Southern Brazil and South America, being designated part of the Western Hemisphere Shorebird Reserve Network in 1990 and as a Ramsar site since 2007 (Fedrizzi & Carlos, 2011) (Figure 1). Furthermore, in 1992, the park was also considered as part of the Atlantic Forest Biosphere Reserve and, in 1999, was classified as Advanced Post of Atlantic Forest Reserve, recognizing its importance to the conservation not only of wetlands but also of associated forests (Moraes, 2009; Paludo et al., 2022). Besides that, the park is one of the only places in Brazil that maintains a resident population of Chilean Flamingo *Phoenicopterus chilensis* Molina, 1782 that can be seen all year round, increasing in size during the spring (Delfino & Aldana-Ardila, 2020; Delfino & Carlos, 2022). Other animals also live in the area, many of them related to the wetland environments or grasslands from Southern Brazil, including crustaceans, mammals, fishes, and turtles, many of them also currently threatened (Knak, 1999).

The presence of migratory birds is the main attraction of the area, visited by tourists, birdwatchers, and ornithologists for the observation of these species. The lagoon, mainly the inlet is used for fishing and shrimp cultivation (HCD, personal observation, 2023). Besides that, despite the prohibition, the area is also used for cattle raising and agricultural purposes, being the center of a land use and territory dispute on the coast of the Rio Grande do Sul state (Moraes, 2009; Benedetti, 2018).

DATA ASSEMBLAGE AND CATEGORIZATION

Every bird record from the LPNP presented in the literature, online databases, and museum collections, was collected and categorized, as follows: *Museu de Ciências Naturais* (MUCIN), *Universidade Federal do Rio Grande do Sul* (UFRGS); *Coleção de Aves* (CAFURG), *Universidade Federal de Rio Grande* (FURG); *Museu de Ciência e Tecnologia* (MCT), *Pontifícia Universidade Católica do Rio Grande do Sul* (PUCRS); Vert-Net Online Database (VertNet, n. d.); Macauley Library and eBird (ML;

Macauley Library, n. d.); iNaturalist (n. d.); WikiAves (n. d.); and Xeno-canto (n. d.). Every record that was nominally referred to the Lagoa do Peixe and other areas inside the park were included, such as Barra da Lagoa do Peixe lagoon, Talha Mar trail, das Figueiras trail, dos Flamingo's trail, lagoon interior, coastal area, and every name of the lagoon's subdivisions (Figure 1). The bird records that did not mention the LPNP but included GPS coordinates that indicated that the record occurred inside the park limits were also considered.

The lists utilized the nomenclature and taxonomic organization of the Brazilian Ornithological Records Committee (CBRO), the committee responsible to maintain the occurrence, the name, and the taxonomic categories of birds that occur in Brazil updated according to the recent literature (Pacheco et al., 2021). The subspecies, in non-monotypic taxa, was defined based only on the current known geographical distribution of the different subspecies, with the help of updated scientific and ornithological literature (Jacobs & Fenalti, 2020; Pacheco et al., 2021). Following the CBRO recommendations, the records of Lagoa do Peixe were organized into four different lists, according to the accuracy of the records and the presence of evidence to support the occurrence of the species inside the park (Carlos et al., 2010). The lists were defined as:

- Primary List: species with at least one unequivocal record for the LPNP, well documented in digital databases, museum collections, or previous literature, both in the form of photographs, audio records, or preserved specimens.
- Secondary List: species with records for the LPNP present in the online databases or scientific literature for the area, but with no documentation that supports the record, despite the probable occurrence in the region.
- Tertiary List: species with published records for the LPNP but with the absence of evidence to support the record, being either questionable or incorrect, based on the low probability of the occurrence of the species in the park.

- Potential List: species with no public record or evidence for the LPNP but with a documented record for areas in at least a 50 km radius from the LPNP, having the probability to also occur inside the park limits. The radius of 50 km was chosen due to its high coverage of the Mostardas peninsula, encompassing a large number of areas similar to LPNP nearby. The probability of occurrence was classified as high, in the case of resident species with high occurrence nearby, medium, in the case of resident species with rare encounters, and low, in the case of vagrant and occasional species in the region.

For every species in the primary and secondary list, data related to regional presence, food guild, *habitat* type, global population trend, and regional, national, and global conservation status were collected. According to regional presence and occurrence, the species were classified as Resident (R), for species that live and breed inside the park; Contra nuptial Migratory (V), for species that visit the area during the non-breeding season to feed and rest; Breeding Migratory (B), for species that visit the area during its breeding season to breed and raise the offspring in RS; and Occasional (O), including vagrant species or birds that sporadically visit the area. In the case of the contra nuptial or breeding migratory and occasional species, when possible, the direction from where the species come was noted as South (S) or North (N). Pelagic species (P) were classified in a separate category and species with no distribution status known, were classified as Unknown (U). The regional classification of occurrence and distribution of species was made based on the categories and information in current ornithological literature (del Hoyo et al., 1992; Somenzari et al., 2018; Jacobs & Fenalti, 2020; Pacheco et al., 2021).

The food guild and the *habitat* type were determined based on two different databases that summarize information from the literature about *habitat* preference and food guild of all the current bird species: EltonTraits1.0 (Wilman et al., 2014) and AVONET (Tobias et al., 2022). The food guild of species (Simberloff & Dayan, 1991) was classified based on

the main part of the bird diet: Fruits and Flowers (including nectar and pollen) (Fr), Grasses and Seeds (Gr), Invertebrates (In), Vertebrates (Ve), or Omnivorous (Om). The *habitat* type denotes the relationship of the species to the three main environments of Lagoa do Peixe, including species that live and feed exclusively in the lagoon and its dependencies, in flooded fields nearby or on the shore and coastal areas of the park (Wet); species more related to the natural, artificial or bushy grasslands present in the park (Grass); species that were more reported in forest environments (For); or even species exclusively seen in the sea and maritime *habitats*, due to their pelagic behavior (Mar). The species classification is based on the natural history of the species and literature information, being a simplified way to classify the complex and dynamic relationship between the species and the different park areas. Species that were common in two different environments were classified individually in each category, meanwhile, species that were common in all three different categories were classified as mixed *habitat* (Mix) (Wilman et al., 2014).

At last, the global population trend and the global conservation status were obtained through the IUCN database (IUCN, 2022), classifying the populations as increasing (I), decreasing (D), or stable (S), while the categories of conservation status classified the species as Least Concern (LC), Near Threatened (NT), Vulnerable (VU), Endangered (EN), Critically Endangered (CR) and Data Deficient (DD) (IUCN, 2022). The same levels of conservation status were obtained for the national level (Brasil, 2022) and the regional level (Rio Grande do Sul, 2014), with some species being classified as Not Applied (NA), since the threatened species list of Brazil and Rio Grande do Sul state only include species that have a significant proportion of their population inside its territories (ICMBio, 2018). The proportion of species in each category was calculated using only the total number of species in the Primary and Secondary lists.

RESULTS

In total, we found 387 avian species from 27 orders and 69 families in the review of the multiple data sources for the



Lagoa do Peixe National Park (LPNP) and surroundings areas. The primary list has 288 species with validated records for the study area (Appendix 1). The secondary list has 61 species with no vouched occurrences, but were described in the literature or databases (Appendix 1). There are six species recorded for the Mostardas peninsula, despite no confirmation that the records occur inside the LPNP, therefore included in the secondary list. Regarding to the occurrence pattern of the species from primary and secondary lists, 239 (68.48%) were classified as residents, 74 (21.20%) as migratory, 18 (5.16%) occur only occasionally in the area and 13 (3.73%) were classified as pelagic (Appendix 1). At last, only five species (1.43%) were classified as Unknown, in the case of Chiloe Wigeon *Mareca sibilatrix* (Poeppig, 1829), White-cheeked Pintail *Anas bahamensis* Linnaeus, 1758, Lake Duck *Oxyura vittata* (Philippi, 1860), Wood Stork *Mycteria americana* Linnaeus, 1758, and Subtropical Doradito *Pseudocolopteryx acutipennis* (Sclater & Salvin, 1873) due the lack of distribution and movement pattern information in the literature.

Regarding to migratory species, 50 of them (14.32% of the total records) were classified as contra nuptial and 24 as breeding (6.87% of the total records). The majority of migratory species come from the North ($n = 57$), for breeding or resting and foraging in the contra nuptial areas, but 15 species come from southern territories, exclusively using the Lagoa do Peixe as a contra nuptial area (Appendix 1). There were two species, Cabot's Tern *Thalasseus acutiflavus* (Cabot, 1847) and Royal Tern *Thalasseus maximus* (Boddaert, 1783), that have populations that breed in the Southwest coast of Brazil but also in the coast of Argentina, thus both species being considered migrating from north and south (Jacobs & Fenalti, 2020).

Concerning the conservation status of the species reported for the LPNP, a major part of bird species is categorized as Least Threatened ($n = 333$, 95.41%) or Near Threatened ($n = 11$, 3.15%), but 13 species were reported at some degree of threat (Vulnerable, Endangered or Critically Endangered), at international, national or

regional lists (Appendix 1). For these 13 species, Cabot's Tern *T. acutiflavus*, Brown-crested Flycatcher *Myiarchus tyrannulus* (Statius Muller, 1776), and Chestnut-bellied Seed-Finch *Sporophila angolensis* (Linnaeus, 1766) were only considered under threat for the state of Rio Grande do Sul, while Royal Tern *T. maximus*, Cinereous Harrier *Circus cinereus* Vieillot, 1816, and Black-browed Albatross *Thalassarche melanophris* (Temminck, 1828) were also included in the Brazilian national list. All threatened species at the international level were also included in the other two lists (national and regional). According to the three lists, 30 species were categorized as Data Deficient (DD) or were not included in the lists (NA), mainly at the regional and national levels. For the species on the international red list, the majority of populations were considered stable ($n = 151$, 43.26%), despite a significant proportion of bird populations reported are decreasing in the present or near future ($n = 114$, 32.66%) and some species with unknown populational tendencies ($n = 26$, 7.44%).

Surprisingly, most species reported for LPNP were forest birds, living in swamp forests or subtropical forest formations of the study area ($n = 146$, 41.83%), mainly Passeriformes, Psittaciformes, and Columbiformes. Eighty species (22.92%) reported for the area are exclusively linked to the wetland and shore environments, while many other species can be related to both wetlands and other forms of *habitat* categorization, such as grasslands or forests ($n = 40$, 11.46%). The major group of birds linked to wetlands ecosystems at Lagoa do Peixe are the Charadriiformes and Anseriformes, with also special attention to Phoenicopteriformes and Podicipediformes, with distinctive species present in the area. The grassland species were also significantly present ($n = 110$, 31.51%), with the occurrence of typical species of Gruiformes and Passeriformes associated with these environments. Seven species (2.01%) were classified as mixed environments, due to the occurrence in different *habitats* inside the park and 30 (8.59%) species were linked to marine environments, all of them belonging to the Charadriiformes (Laridae and Stercorariidae), Sphenisciformes, and Procellariiformes,



because of their pelagic habits and occurrence in high seas. Regarding the species diet in the park, the invertebrates seem to be the main prey for the greatest number of species ($n = 170$, 48.71%), despite a significant number of birds in the park being specialized in the consumption of grains and seeds ($n = 46$, 13.18%) or vertebrates ($n = 68$, 19.48%), mainly related to the wetland and grassland environments. Omnivorous species ($n = 52$, 14.9%) were also present, as well as species specialized in fruits and flowers, in a smaller proportion ($n = 13$, 3.72%).

Ten species were included in the Tertiary list (Table 1) since they were described for the area, but with a low probability of occurrence, mainly due to taxonomic changes or misidentification by the observer. Moreover, 28 species were classified in the Potential List (Table 2),

since they are confirmed and vouched for an area of a 50 km radius from the park boundary, despite the absence of records inside the park. In the potential list, we included species with relatively common and frequent records nearby the park, that use similar environments as the ones found within LPNP, such as Scaled Chachalaca *Ortalis squamata* (Lesson, 1829), Turquoise-fronted Parrot *Amazona aestiva* (Linnaeus, 1758) and Swallow-tailed Hummingbird *Eupetomena macroura* (Gmelin, 1788). Other species included in the potential list, like James's Flamingo *Phoenicoparrus jamesi* (Sclater, 1886) and Light-mantle Albatross *Phoebetria palpebrata* (Forster, 1785), have few records in the Mostardas peninsula, probably being vagrant or occasional individuals, with a low probability of being recorded inside the park.

Table 1. Tertiary list of bird species for the Lagoa do Peixe National Park, including species that were probably incorrectly reported for the area inside the park and without any valid *voucher* for the record. In the table, the reasons for the inclusion of the species in the tertiary list are included for each case. (Continue)

Taxon	English name	Reason
ANSERIFORMES		
Anatidae		
<i>Cairina moschata</i> (Linnaeus, 1758)	Muscovy Duck	The reports for the area were probably from domesticated introduced animals, or confused with other duck native species (Rufino et al., 2017).
GALLIFORMES		
Cracidae		
<i>Ortalis guttata</i> (Spix, 1825)	Speckled Chachalaca	The reports for the area probably referred to the species <i>Ortalis squamata</i> , since the <i>O. guttata</i> species only occur in the Amazon (Vaurie, 1965; Jacob, 2022).
CHARADRIIFORMES		
Recurvirostridae		
<i>Himantopus mexicanus</i> (Statius Muller, 1776)	Black-necked Stilt	The reports for the area probably refer to the species <i>Himantopus melanurus</i> , fruit of a recent division in the <i>Himantopus</i> genera (Frias et al., 2022).
PELECANIFORMES		
Threskiornithidae		
<i>Mesembrinibis cayennensis</i> (Gmelin, 1789)	Green Ibis	The report for the area probably referred to other similar species, since the <i>M. cayennensis</i> only occur in the northern area of Rio Grande do Sul (Amorim & Piacentini, 2006).
CATHARTIFORMES		
Cathartidae		
<i>Sarcorampus papa</i> (Linnaeus, 1758)	King Vulture	The species are not very common in the state of Rio Grande do Sul (Tortaro & Rupp, 2007).



Table 1. (Conclusion)

Taxon	English name	Reason
ACCIPITRIFORMES		
Accipitridae		
<i>Chondrohierax uncinatus</i> (Temminck, 1822)	Hook-billed Kite	In the state of Rio Grande do Sul, the species only occur in the Northwest region (Martins & Donatelli, 2013).
PASSERIFORMES		
Furnariidae		
<i>Phacellodomus erythrophthalmus</i> (Wied, 1821)	Orange-eyed Thornbird	The record for the area was probably referring to <i>P. ferrugineigula</i> , since <i>P. erythrophthalmus</i> is native to Southeast Brazil (Costa et al., 2014).
Vireonidae		
<i>Vireo olivaceus</i> (Linnaeus, 1766)	Red-eyed Vireo	The species only occur in the Amazon biome, with few records outside North Brazil. The record for the area was probably referring to <i>V. chivi</i> (Capllonch & Wagner, 2009).
Icteridae		
<i>Icterus cayanensis</i> (Linnaeus, 1766)	Epaulet Oriole	The species is native to North Brazil, only occurring in the Amazon biome (D'Horta et al., 2008).
Thraupidae		
<i>Microspingus lateralis</i> (Nordmann, 1835)	Buff-throated Warbling-Finch	The species is native to Southeast Brazil. The records for the park are probably referring to <i>M. cabanisi</i> (Assis et al., 2007).

Table 2. The potential list of bird species that could happen inside Lagoa do Peixe National Park but with still no reported record for the area, based on valid records for the species in a 50 km radius of the Park. The probability of occurrence for each species was classified as high, medium, or low, according to the number of records reported and the occurrence of the species in the region. (Continue)

Taxon	English name	Probability of occurrence
TINAMIFORMES		
Tinamidae		
<i>Crypturellus obsoletus</i> (Temminck, 1815)	Brown Tinamou	Medium
GALLIFORMES		
Cracidae		
<i>Ortalis squamata</i> (Lesson, 1829)	Scaled Chachalaca	High
PHOENICOPTERIFORMES		
Phoenicopteridae		
<i>Phoenicoparrus jamesi</i> (Sclater, 1886)	James's Flamingo	Low
CUCULIFORMES		
Cuculidae		
<i>Micrococcyx cinereus</i> (Vieillot, 1817)	Ash-colored Cuckoo	Medium
APODIFORMES		
Trochilidae		
<i>Stephanoxis loddigesii</i> (Gould, 1831)	Violet-crowned Plovercrest	High
<i>Thalurania glaucopis</i> (Gmelin, 1788)	Violet-capped Woodnymph	High
<i>Eupetomena macroura</i> (Gmelin, 1788)	Swallow-tailed Hummingbird	High
CHARADRIIFORMES		
Scolopacidae		
<i>Gallinago undulata</i> (Boddaert, 1783)	Giant Snipe	Medium

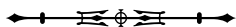


Table 2. (Conclusion)

Taxon	English name	Probability of occurrence
Stercorariidae		
<i>Stercorarius maccormicki</i> Saunders, 1893	South Polar Skua	Medium
<i>Stercorarius longicaudus</i> Vieillot, 1819	Long-tailed Jaeger	Medium
PROCELLARIIFORMES		
Diomedidae		
<i>Phoebastria palpebrata</i> (Forster, 1785)	Light-mantled Albatross	Low
<i>Diomedea exulans</i> Linnaeus, 1758	Wandering Albatross	Low
Procellariidae		
<i>Procellaria conspicillata</i> Gould, 1844	Spectacled Petrel	Low
<i>Calonectris diomedea</i> (Scopoli, 1769)	Scopoli's Shearwater	Low
ACCIPITRIFORMES		
Accipitridae		
<i>Elanus leucurus</i> (Vieillot, 1818)	White-tailed Kite	High
STRIGIFORMES		
Strigidae		
<i>Asio flammeus</i> (Pontoppidan, 1763)	Short-eared Owl	Medium
PICIFORMES		
Picidae		
<i>Veniliornis spilogaster</i> (Wagler, 1827)	White-spotted Woodpecker	High
<i>Dryocopus lineatus</i> (Linnaeus, 1766)	Lineated Woodpecker	High
CARIAMIFORMES		
Cariamidae		
<i>Cariama cristata</i> (Linnaeus, 1766)	Red-legged Seriema	High
PSITTACIFORMES		
Psittacidae		
<i>Amazona aestiva</i> (Linnaeus, 1758)	Turquoise-fronted Parrot	High
<i>Psittacara leucophthalmus</i> (Statius Muller, 1776)	White-eyed Parakeet	Medium
PASSERIFORMES		
Dendrocolaptidae		
<i>Drymornis bridgesii</i> (Eyton, 1849)	Scimitar-billed Woodcreeper	Low
Furnariidae		
<i>Schoeniophylax phryganophilus</i> (Vieillot, 1817)	Chotoy Spinetail	High
Tyrannidae		
<i>Elaenia chilensis</i> Hellmayr, 1927	Chilean Elaenia	Medium
<i>Contopus virens</i> (Linnaeus, 1766)	Eastern Wood-Pewee	Low
<i>Nengetus cinereus</i> (Vieillot, 1816)	Gray Monjita	Medium
Hirundinidae		
<i>Progne subis</i> (Linnaeus, 1758)	Purple Martin	Medium
Motacillidae		
<i>Anthus nattereri</i> Sclater, 1878	Ochre-breasted Pipit	Low
Thraupidae		
<i>Stilpnia preciosa</i> (Cabanis, 1850)	Chestnut-backed Tanager	High



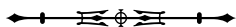
DISCUSSION

Since the late 1970s, the first ornithological census and zoological studies in the Lagoa do Peixe National Park (LPNP) pointed out the importance of the area for bird species from the entire American continent, especially the migratory ones, coming from the Nearctic realm and the southern part of South America (Belton, 1985; Resende & Leeuwenberg, 1987; Antas, 1994; Carlos & Fedrizzi, 2011). The updated list of bird species from the park sums a new maximum of bird species from the area, including a hundred new species that were absent from the previous ornithological list for the area constructed by Nascimento (1995) and has 42 exclusive species included that were not present in any posterior literature for the area. The construction of the first complete ornithological list of the LPNP is also the first attempt to construct Primary, Secondary, Tertiary, and Potential Lists for the area. The lists allow further development of ornithological studies in the park that account for the occurrence of the new and potential species or that seek to document the species that are reported for the area but with no photographic, sonographic or biological material *voucher* to account for the record (Fitzpatrick et al., 2007; Rojas-Soto et al., 2009). When compared to other coastal preserved areas nearby, such as Taim Ecological Station (220 bird species) (Mähler et al., 1996), in the southern coast of the state, and Itapeva State Park (167 bird species) (Duarte & Bencke, 2006), in the extreme north of Rio Grande do Sul coast, the LPNP stands out by the high ornithological diversity and uniqueness composition. In this updated list of species, Lagoa do Peixe concentrates 49.57% of the bird richness of the Rio Grande do Sul state (Franz et al., 2018) and 17.71% of the species recorded in Brazil (Pacheco et al., 2021), reinforcing the importance of the area and its conservation for the ornithological and wetland fauna of Brazil.

A significant proportion of the recorded species in the LPNP are migratory, mostly from the Northern Hemisphere, reinforcing the importance of the area as a wintering and contra nuptial ground for species that

breed in the cold regions of North America and search for food and refuge during the boreal winter at Lagoa do Peixe, such as the case of the Red Knot *Calidris canutus* (Linnaeus, 1758) and the Buff-breasted Sandpiper *Calidris subruficollis* (Vieillot, 1819) (Melo, 2014; Silva & Hartz, 2018; Paludo et al., 2022). Another group of species often displays the opposite pattern, coming from the southern parts of South America to escape from the harsh and cold weather conditions of the austral winter. They use LPNP as a stopover or foraging area during these times, as occurs for the Two-banded Plover *Charadrius falklandicus* Latham, 1790 and South American Tern *Sterna hirundinacea* Lesson, 1831 (Branco, 2003; Faria et al., 2021), despite some of them, as occurred with the Two-banded Plover, already being recorded breeding in the area (Faria et al., 2021). The opposed regimes of migration and displacement of these species avoid the extra competition for resources during the year since they often use the park in different periods: the northern species use the area during the austral spring and summer, meanwhile, the southern species come to the park during the fall and winter period in the southern hemisphere (Greenberg et al., 1994; Ahola et al., 2007).

The park also presented a high number of resident species, all year round, using the park to both forage and rest, but also to breed and raise the offspring, often from September to March, such as the case of Great Egret *Ardea alba* Linnaeus, 1758, Greater Rhea *Rhea americana* (Linnaeus, 1758), and Rufous-bellied Thrush *Turdus rufiventris* Vieillot, 1818 (Bencke et al., 2010; Maurício et al., 2013; Somenzari et al., 2018). Nevertheless, for many resident species, movement patterns inside Brazil remain unknown, with probable occurrence in the park of species that move between central Brazilian grasslands and wetlands, mainly in the *Cerrado* and *Pantanal* ecoregions, also seeking for better foraging conditions during the dry season in these environments, and Southern Brazil, for instance, probably the case of the Roseate Spoonbill *Platalea ajaja* Linnaeus, 1758 and White-faced Ibis *Plegadis chihi* (Vieillot, 1817) (Somenzari et al., 2018).



At last, the park presented a high number of species with few records, indicating vagrant or occasional individuals that arrived in the area due to bad weather conditions, turbulent wind currents, or lost individuals, such as the case of the Andean Flamingo *Phoenicoparrus andinus* (Philippi, 1854), Upland Goose *Chloephaga picta* (Gmelin, 1789), Brown Booby *Sula leucogaster* (Boddaert, 1783) and Eurasian Whimbrel *Numenius phaeopus* (Linnaeus, 1758) (Franz et al., 2011; Bencke & Souza, 2013; Meller et al., 2020). The richness of migratory and occasional species that occur in different parts of the year and resident species that can be observed during their entire annual cycle make Lagoa do Peixe a place with high potential for ornithological tourism, that could attract thousands of birdwatchers during different times of the year, to observe the bird diversity found in the LPNP (Janeczko et al., 2021). The occurrence of pelagic species is also reported for the LPNP despite many species still including in the Secondary List and with no concrete documentation for the park area, such as Southern Fulmar *Fulmarus glacialoides* (Smith, 1840) and Cape Petrel *Daption capensis* (Linnaeus, 1758) mainly due the rapid disappearance of the carcass on the beach and the low collection effort in some regions (e.g. Zimmerman et al., 2019).

Regarding the environments presented inside LPNP, the list highlights the great variety of different *habitats* within the area, with bird species typically from tropical or sub-tropical forests, species that usually live in open grasslands, and species that are intrinsically linked to wetland environments, the lagoon, and the ocean. The shape of the lagoon, the main element of the park ecosystem, creates a gradient of wetland environments, from the almost salt and brackish water in the inlet, where the lagoon meets the sea, to almost freshwater ecosystems both in the north and south portion of the park, where the lagoon often inundates the grasslands (Arejano, 2006; Schossler et al., 2018). In the first environments, the species familiarized with higher salinity and coastal sand beaches, such as the Chilean Flamingo, and many species of the Charadriiformes

thrive (Gonçalves, 2010; Paludo et al., 2022). Meanwhile, in the extremes of the lagoon, there are birds more adapted to freshwater environments, with low salinity and more calm waters, such as representants of the Anseriformes and Pelecaniformes (Nascimento et al., 2006; Perello, 2006).

The lagoon's indentations and curves also help to create distinctive environments, usually called 'lagamares', with unique and complex relationships with the surrounding *habitats*, favoring the high ornithological richness of the park (Belton, 1985; Harrison et al., 2013). Harrison et al. (2013) described that the occurrence of different patches of forests and grasslands among the pockets of the lagoon can explain the high diversity of the avian community at Lagoa do Peixe, usually hard to find and underestimated due to the difficulties in completing surveys in the area. The park has many areas of shrubs, dunes, wet grasslands, and sandbanks that are only accessible by foot since inside the park few areas have trails or roads that could be accessed by car (Knak, 1999; Harrison et al., 2013). Furthermore, the average depth of the lagoon of only 60 cm makes it very hard to navigate boats or canoes in some portions of the lagoon, increasing the difficulty of observation and study of these areas (Knak, 1999).

Reflecting the complex and different environments present in the park, the diet of the bird community in the park also presented a high variation among the different groups of species (García-Núñez et al., 2020; Tu et al., 2020). For coastal and wetland species, the invertebrates were the main source of food, mainly from the sandy beaches and the Barra region, an important ecotone between the lagoon and the sea, with a high variety of crustaceans, annelids, mollusks, and other microorganisms related to brackish environments (Goss-Custard et al., 2007; Aldana-Ardila & Carlos, 2022). In the outer parts of the park, where the influence of the sea on the lagoon decreases, the main diet of the wetland birds seems to be from vegetal origin, mainly microalgae, plants, and seeds, coming from the nearby flooded grasslands (Moorcroft et al., 2002; Crowley & Garnett, 2009).

In the grasslands, there is also a large portion of birds that feed on soil invertebrates and native grass seeds, in addition to carnivorous species that often hunt and feed on vertebrate species that live in the area, such as lizards, rodents, and passerines (Kaspari & Joern, 1993; Fargallo et al., 2020). In the coastal area and the wetland, carnivores specialized in consuming fish or carrion on the beach can also be found (Barrett et al., 2007). In the portions of Atlantic Forest located in the park reside the main species specialized in feeding on fruits and flowers, usually living nearby native fruit trees, such as the Bacupari *Garcinia Gardneriana* (Planch. & Triana) Zappi, Ubajay *Eugenia myrcianthes* Nied. and Jelly Pams *Butia sp.* (Becc.) Becc., which are common in the area (Knak, 1999; Lopes & Silva, 2006).

Despite its high variety and complexity, the avian community found in the LPNP is under specific pressure that exposes the populations to threats that can lead to their decrease, especially for the species under extinction threat internationally, nationally, or regionally (Belton, 1985; Knak, 1999; Delfino & Aldana-Ardila, 2020). The presence of a significant number of species considered Near Threatened, Vulnerable, Endangered, or Critically Endangered in the area reinforces the importance of Lagoa do Peixe for the conservation of bird species in South Brazil, where only a few areas presented the richness and variety of environments and species found in the park. For wetlands species, the main current threats are exposure to overfishing, pollution, and bad artificial management of the lagoon, which annually dries out many flooded areas and decreases food availability in the lagoon (Loebmann & Vieira, 2006; Crippa, 2011; Benedetti, 2018). For the grassland species, the recent increase in the presence of domestic animals and the illegal invasions of land for animal husbandry can lead to egg trampling and nest exposure (Knak, 1999; Moraes, 2009; Sharps et al., 2017). Furthermore, for the forest species, the growing invasion of *Pinus spp.* inside the area are worrying, with the plants often invading grasslands, dunes, and native areas of forest, consuming soil nutrients and resources and

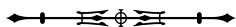
often competing in an uneven competition, that ultimately can affect the bird community in these areas (Almudi & Kalikoski, 2009; Signori, 2018; Matos et al., 2018).

CONCLUSION

Ornithological knowledge and an updated list of birds in the area are important tools for the continuity of ecological and conservation studies in the area, facilitating the management of the different actions and plans towards the conservation and preservation of all the Lagoa do Peixe environments and their associated animal species (Perello et al., 2010). The list confirms the importance of Lagoa do Peixe as a stopover and contra nuptial area for a variety of bird species, but also as an important breeding area for resident species and southern migrants, some of these species under threat, and most of them suffering from population declines (Bencke et al., 2010; Harrison et al., 2013). The conservation of the complex wetland environment of Lagoa do Peixe is essential for the near and far future of bird conservation in Southern Brazil and for that, the integrated support of the local community, political figures, park administration, and researchers is essential (Almudi & Kalikoski, 2009; Delfino & Aldana-Ardila, 2020). The ornithological list of the park can also be a subsidy for environmental education projects in the Mostardas and Tavares region, as well as a tool for ecological tourism and birdwatching in the park, raising attention to its problems and the importance of its conservation (Kaiser et al., 2022).

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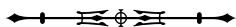
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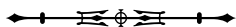
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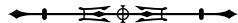


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Appendix 1. Bird list of the Lagoa do Peixe National Park, including species with valid records and confirmed *vouchers* for the area, and species reported for the area in the literature but with no valid *voucher*, included between brackets. The species were classified according to their occurrence in the area (R – Resident; V – Contranuptial Migratory; B – Breeding Migratory; O – Occasional; P – Pelagic; S – from the South; N – from the North), the diet (Fr – Fruits and Flowers; Gr – Grass and Seeds; In – Invertebrates; Ve – Vertebrates; Om – Omnivorous), the main type of habitat (Hab.) (For – Forest; Grass – Grassland; Wet – Wetland and Coastal Area; Mar – Maritime; Mix – Mixed), conservation status at international, national and regional level (EX – Extinct; EW – Extinct in the Wild; CR – Critically Endangered; EN – Endangered; VU – Vulnerable; NT – Near Threatened; LC – Least Concern; DD – Data Deficient; NA – Not Available) and worldwide population trend (Pop. Trend) (I – Increasing; D – Decreasing; S – Stable). Species marked with * present records for the cities of Mostardas or Tavares, but with no confirmation that the records were made inside the Lagoa do Peixe National Park. For each species in the primary list, when possible, was provided the source of record (photo, sound, *voucher* specimens, and literature reference). WA = WikiAves; XC = Xenocanto; MCP = *Museu de Ciências da PUC*; MUCIN = *Museu de Ciências Naturais (UFRGS)*; CAFURG = *Museu da Universidade Federal de Rio Grande*; AMINH = American Museum of Natural History.

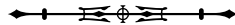
Taxon	English name	Occurrence	Diet	Hab.	Pop. trend	Conservation status (IUCN/BR/RS)	Photo code	Sound code	Voucher specimens	Reference
RHEIFORMES										
Rheidae										
<i>Rhea americana</i> (Linnaeus, 1758)	Greater Rhea	R	Om	Grass	D	NT/LC/LC	WA4620998			Pereira and Poerschke (2010)
TINAMIFORMES										
Tinamidae										
[<i>Rhynchotus rufescens</i> (Temminck, 1815)]	[Red-winged Tinamou]	R	Om	Grass	D	LC/LC/LC				Resende and Leeuwenberg (1987)
<i>Nothura maculosa</i> (Temminck, 1815)	Spotted Nothura	R	Om	Grass	D	LC/LC/LC	WA4579673		MCP 1598	Pereira and Poerschke (2010)
ANSERIFORMES										
Anhimidae										
<i>Chauna torquata</i> (Oken, 1816)	Southern Screamer	R	Gr	Grass	S	LC/LC/LC	WA4586741	WA3335042		
<i>Anhima cornuta</i> (Linnaeus, 1766)	Horned Screamer	O	Om	Wet/For	D	LC/LC/LC	WA2461382			
Anatidae										
<i>Dendrocygna bicolor</i> (Vieillot, 1816)	Fulvous Whistling-Duck	R	Gr	Wet	D	LC/LC/LC	WA4575218			Nascimento (1995) cited in Knak (1999)
<i>Dendrocygna viduata</i> (Linnaeus, 1766)	White-faced Whistling-Duck	R	Gr	Wet	I	LC/LC/LC	WA4625427			Nascimento (1995) cited in Knak (1999)
[<i>Dendrocygna autumnalis</i> (Linnaeus, 1758)]	[Black-bellied Whistling-Duck]	R	Gr	Wet	I	LC/LC/NA				



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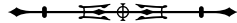
Taxon	English name	Occurrence	Diet	Hab.	Pop. trend	Conservation status (IUCN/BR/RS)	Photo code	Sound code	Voucher specimens	Reference
<i>Cygnus melanocoryphus</i> (Molina, 1782)	Black-necked Swan	R	Gr	Wet	S	LC/LC/LC	WA4656311	WA3589095	MCP 1431	Nascimento (1995) cited in Knak (1999)
<i>Coscoroba coscoroba</i> (Molina, 1782)	Coscoroba Swan	R	Om	Wet	S	LC/LC/LC	WA4651641	WA4134683	MCP 1430	Nascimento (1995) cited in Knak (1999)
<i>Chioephaga picta</i> (Gmelin, 1789)	Upland Goose	O	Gr	Wet	D	LC/NA/LC	Bendke & Souza (2013)			
<i>Sarkidiornis sylvicola</i> Ihering & Ihering, 1907	American Comb Duck	R	Gr	Wet	D	LC/LC/NT	WA475142			
<i>Callonetta leucophrys</i> (Vieillot, 1816)	Ringed Teal	R	Gr	Wet	D	LC/LC/LC	WA3958000			Bendke et al. (2007)
<i>Amazonetta brasiliensis</i> (Gmelin, 1789)	Brazilian Teal	R	Om	Wet	D	LC/LC/LC	WA3943023			Nascimento (1995) cited in Knak (1999)
<i>Spatula versicolor</i> (Vieillot, 1816)	Silver Teal	R	Om	Wet	S	LC/LC/LC	WA4586731			Nascimento (1995) cited in Knak (1999)
<i>Spatula platalea</i> (Vieillot, 1816)	Red Shoveler	R	Om	Wet	S	LC/NA/NA	WA4591319			Mohr (2003)
<i>[Mareca sibilatrix</i> (Poeppig, 1829)]	[Chiloe Wigeon]	U	Om	Wet	S	LC/NA/NA				Nascimento (1995) cited in Knak (1999)
<i>Anas bahamensis</i> Linnaeus, 1758	White-cheeked Pintail	U	Gr	Wet	D	LC/LC/NA	WA2794476			Pereira and Poerschke (2010)
<i>Anas georgica</i> Gmelin, 1789	Yellow-billed Pintail	R	Gr	Wet	D	LC/LC/LC	WA4652800	WA2465748		Nascimento (1995) cited in Knak (1999)
<i>Anas flavirostris</i> Vieillot, 1816	Yellow-billed Teal	R	Gr	Wet	D	LC/LC/LC	WA4626192	WA3589091		Nascimento (1995) cited in Knak (1999)
<i>Netta peposaca</i> (Vieillot, 1816)	Rosy-billed Pochard	R	Gr	Wet	I	LC/LC/LC	WA4438669		MCP 97	Nascimento (1995) cited in Knak (1999)
<i>Heteronetta atricapilla</i> (Merrem, 1841)	Black-headed Duck	R	Gr	Wet	S	LC/LC/LC	WA4130335			Nascimento (1995) cited in Knak (1999)
<i>[Nonyx dominicus</i> (Linnaeus, 1766)]	[Masked Duck]	R	Gr	Wet	S	LC/LC/LC				Pereira and Poerschke (2010)
<i>Oxyura vittata</i> (Philippi, 1860)	Lake Duck	U	Gr	Wet	S	LC/NA/NA	WA3750301			Nascimento (1995) cited in Knak (1999)



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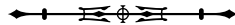
Taxon	English name	Occurrence	Diet	Hab.	Pop. trend	Conservation status (IUCN/BR/RS)	Photo code	Sound code	Voucher specimens	Reference
GALLIFORMES										
Odontophoridae										
<i>[Odontophorus capueira (Spix, 1825)]</i>	[Spot-winged Wood-Quail]	R	Fr	For	D	LC/LC/NT				
PHOENICOPTERIFORMES										
Phoenicopteridae										
<i>Phoenicopterus chilensis</i> Molina, 1782	Chilean Flamingo	R	In	Wet	D	NT/NA/NA	WA4651631	WA3589097		Nascimento (1995) cited in Knak (1999)
<i>Phoenicoparrus andinus</i> (Philippi, 1854)	Andean Flamingo	O	In	Wet	D	VU/NA/NA	WA2578804			Nascimento (1995) cited in Knak (1999)
PODICIPEDIFORMES										
Podicipedidae										
<i>Rollandia rolland</i> (Quoy & Gaimard, 1824)	White-tufted Grebe	R	Ve	Wet	D	LC/LC/LC	WA4629072			Nascimento (1995) cited in Knak (1999)
<i>[Tachybaptus dominicus</i> (Linnaeus, 1766)]	[Least Grebe]	R	In	Wet	S	LC/LC/LC				Pereira and Poerschke (2010)
<i>Podilymbus podiceps</i> (Linnaeus, 1758)	Pied-billed Grebe	R	In	Wet	I	LC/LC/LC	WA4528781			Nascimento (1995) cited in Knak (1999)
<i>Podiceps major</i> (Boddaert, 1783)	Great Grebe	R	Ve	Wet	S	LC/LC/LC	WA3876483			Nascimento (1995) cited in Knak (1999)
COLUMBIFORMES										
Columbidae										
<i>Columba livia</i> Gmelin, 1789	Rock Pigeon	R	Gr	For	D	LC/NA/NA	WA1549356			
<i>Patagioenas picazuro</i> (Temminck, 1813)	Picazuro Pigeon	R	Gr	For	I	LC/LC/LC	WA3155079			Pereira and Poerschke (2010)
<i>Patagioenas maculosa</i> (Temminck, 1813)	Spot-winged Pigeon	R	Gr	For	I	LC/LC/LC	WA4255853			
<i>[Patagioenas cayennensis</i> (Bonaparte, 1792)]	[Pale-vented Pigeon]	BN	Gr	For	D	LC/LC/LC				
<i>Leptotila verreauxi</i> Bonaparte, 1855	White-tipped Dove	R	Gr	For	S	LC/LC/LC	WA2597685	XC147031		Nascimento (1995) cited in Knak (1999)



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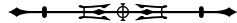
Taxon	English name	Occurrence	Diet	Hab.	Pop. trend	Conservation status (IUCN/BR/RS)	Photo code	Sound code	Voucher specimens	Reference
<i>Leptotila rufaxilla</i> (Richard & Bernard, 1792)]	[Gray-fronted Dove]	R	Gr	For	D	LC/LC/LC				
<i>Zenaidura macroura</i> (Des Murs, 1847)	Eared Dove	R	Gr	For	I	LC/LC/LC	WA4620946			Pereira and Poerschke (2010)
<i>Columbina talpacoti</i> (Temminck, 1811)	Ruddy Ground-Dove	R	Gr	For	I	LC/LC/LC	WA668750			Nascimento (1995) cited in Knak (1999)
<i>Columbina squammata</i> (Lesson, 1831)]	[Scaled Dove]	R	Gr	For	S	LC/LC/NA				
<i>Columbina picui</i> (Temminck, 1813)	Picui Ground-Dove	R	Gr	For	S	LC/LC/LC	WA4501711			Nascimento (1995) cited in Knak (1999)
CUCULIFORMES										
Cuculidae										
<i>Guiraca caerulea</i> (Gmelin, 1788)	Guiraca Cuckoo	R	Om	Grass	I	LC/LC/LC	WA4579721	WA3533152		Nascimento (1995) cited in Knak (1999)
<i>Crotophaga ani</i> (Linnaeus, 1758)	Smooth-billed Ani	R	Om	Grass	S	LC/LC/LC	WA3685002			Nascimento (1995) cited in Knak (1999)
<i>Tapera naevia</i> (Linnaeus, 1766)	Striped Cuckoo	R	In	Grass/For	S	LC/LC/LC	WA4584352			Nascimento (1995) cited in Knak (1999)
<i>Playa cayana</i> (Linnaeus, 1766)	Squirrel Cuckoo	R	In	For	D	LC/LC/LC	WA4152845			Nascimento (1995) cited in Knak (1999)
<i>Coccyzus melacoryphus</i> Vieillot, 1817	Dark-billed Cuckoo	BN	In	For	S	LC/LC/LC	WA4560492	WA2794621		
CAPRIMULGIFORMES										
Caprimulgidae										
<i>Nyctidromus albicollis</i> (Gmelin, 1789)]	[Common Pauraque]	R	In	For	S	LC/LC/LC				
<i>Hydropsalis torquata</i> (Gmelin, 1789)	Scissor-tailed Nightjar	R	In	For	S	LC/LC/LC	WA4575198		MCP 1651	Bencke et al. (2007)
<i>Podager nacusunda</i> (Vieillot, 1817)	Nacusunda Nighthawk	BN	In	For	S	LC/LC/LC	WA3013177			Pereira and Poerschke (2010)
<i>Chordeiles minor</i> (Forster, 1771)	Common Nighthawk	VN	In	For	D	LC/LC/LC	WA2462136			



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Appendix 1.

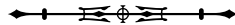
Taxon	English name	Occurrence	Diet	Hab.	Pop. trend	Conservation status (IUCN/BR/RS)	Photo code	Sound code	Voucher specimens	Reference
APODIFORMES										
Apodidae										
<i>[Streptoprocne zonanis</i> (Shaw, 1796)]	[White-collared Swift]	R	In	Mix	D	LC/LC/LC				
<i>[Chaetura cinereiventris</i> Slater, 1862]	[Gray-rumped Swift]	R	In	Mix	D	LC/LC/LC				
<i>[Chaetura meridionalis</i> Hellmayr, 1907]	[Sick's Swift]	BN	In	Mix	D	LC/LC/LC				
Trochilidae										
<i>Florisuga fusca</i> (Vieillot, 1817)	Black Jacobin	R	Fr	For	U	LC/LC/LC	WA2225521			
<i>Chlorostilbon lucidus</i> (Shaw, 1812)	Glittering-bellied Emerald	R	Fr	For	U	LC/LC/LC	WA4179441			
<i>Leucochloris albicollis</i> (Vieillot, 1818)	White-throated Hummingbird	R	Fr	For	U	LC/LC/LC	WA4292984			
<i>Flycatcher chrysura</i> (Shaw, 1812)	Gilded Hummingbird	R	Fr	For	I	LC/LC/LC	WA4581495	XC147030		Nascimento (1995) cited in Knak (1999)
GRUIFORMES										
Aramididae										
<i>Aramus guarana</i> (Linnaeus, 1766)	Limpkin	R	Om	Wet/Grass	S	LC/LC/LC	WA4586216	XC471297		Nascimento (1995) cited in Knak (1999)
Rallidae										
<i>Porphyrio martinica</i> (Linnaeus, 1766)	Purple Gallinule	R	Gr	Wet/Grass		LC/LC	WA3352033			
<i>Laterallus flaviventer</i> (Boddaert, 1783)	Yellow-breasted Crane	R	In	Wet/Grass	U	LC/DD/NA	WA3223510			
<i>Laterallus melanophthalmus</i> (Vieillot, 1819)	Rufous-sided Crane	R	In	Wet/Grass	U	LC/LC/LC	WA3879293	WA3521291		
<i>Laterallus spilopterus</i> (Dumford, 1877)	Dot-winged Crane	R	In	Wet/Grass	D	VU/EN/EN	WA4566080	WA4143434		Nascimento (n. d.) cited in Pereira and Poerschke (2010)
<i>Laterallus leucopyrrhus</i> (Vieillot, 1819)	Red-and-white Crane	R	In	Wet/Grass	U	LC/LC/LC	WA4139463	WA4162153		Harrison et al. (2013)



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Appendix 1.

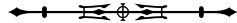
Taxon	English name	Occurrence	Diet	Hab.	Pop. trend	Conservation status (IUCN/BR/RS)	Photo code	Sound code	Voucher specimens	Reference
<i>[Mustirallus albicollis (Vieillot, 1819)]</i>	[Ash-throated Crane]	R	Om	Wet/ Grass	U	LC/LC/LC	WA3503582			
<i>Paridraillus maculatus (Boddaert, 1783)</i>	Spotted Rail	R	In	Wet/ Grass	U	LC/LC/LC				
<i>[Paridraillus nigricans (Vieillot, 1819)]</i>	[Blackish Rail]	R	In	Wet/ Grass	U	LC/LC/LC				
<i>Paridraillus sanguinolentus (Swainson, 1838)</i>	Plumbeous Rail	R	In	Wet/ Grass	S	LC/LC/LC	WA4630373	WA3521284		Nascimento (1995) cited in Knak (1999)
<i>Aramides ypecaha (Vieillot, 1819)</i>	Giant Wood-Rail	R	Om	Wet/ Grass	D	LC/LC/LC	WA4586737	WA4032092		Bencke et al. (2007)
<i>Aramides cajaneus (Statius Muller, 1776)</i>	Gray-necked Wood-Rail	R	Om	Wet/ Grass	S	LC/LC/LC	WA1592048	XC146828		Nascimento (1995) cited in Knak (1999)
<i>[Aramides saracura (Spix, 1825)]</i>	[Slaty-breasted Wood-Rail]	R	In	Wet/ Grass	D	LC/LC/LC				
<i>Porphyrio melanops (Vieillot, 1819)</i>	Spot-flanked Gallinule	R	Om	Wet	S	LC/LC/LC	WA4544989	WA4427780		Nascimento (1995) cited in Knak (1999)
<i>Gallinula galeata (Lichtenstein, 1818)</i>	Common Gallinule	R	Om	Wet	S	LC/LC/LC	WA4545605			Mohr (2003)
<i>Fulica ruffifrons Philippi & Landbeck, 1861</i>	Red-fronted Coot	R	Gr	Wet	S	LC/LC/LC	WA4562676			Nascimento (1995) cited in Knak (1999)
<i>Fulica armillata Vieillot, 1817</i>	Red-gartered Coot	R	Gr	Wet	U	LC/LC/LC	WA4629040			Nascimento (1995) cited in Knak (1999)
<i>Fulica leucoptera Vieillot, 1817</i>	White-winged Coot	R	Gr	Wet	S	LC/LC/LC	WA4255881			Nascimento (1995) cited in Knak (1999)
CHARADRIIFORMES										
Charadriidae										
<i>Ploveria dominica (Statius Muller, 1776)</i>	American Golden-Plover	VN	In	Wet	D	LC/DD/LC	WA4655966	WA4142978	MCP 1526	Nascimento (1995) cited in Knak (1999)
<i>Ploveria squatarola (Linnaeus, 1758)</i>	Black-bellied Plover	VN	In	Wet	D	LC/LC/LC	WA4528819			Nascimento (1995) cited in Knak (1999)
<i>Oreopholus ruficollis (Wagler, 1829)</i>	Tawny-throated Dotterel	VS	In	Wet	D	LC/LC/LC	WA3394768			Nascimento (1995) cited in Knak (1999)



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Appendix 1.

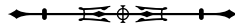
Taxon	English name	Occurrence	Diet	Hab.	Pop. trend	Conservation status (IUCN/BR/RS)	Photo code	Sound code	Voucher specimens	Reference
<i>Varellus chilensis</i> (Molina, 1782)	Southern Lapwing	R	In	Grass	I	LC/LC/LC	WA4657921	WA2465927		Nascimento (1995) cited in Knak (1999)
<i>Charadrius modestus</i> Lichtenstein, 1823	Rufous-chested Dotterel	VS	In	Wet	U	LC/LC/LC	WA4453061	WA4428824		Nascimento (1995) cited in Knak (1999)
<i>Charadrius</i> sp.*	Sand-Plover	O	In	Wet		NA/NA	WA1963968			Franz et al. (2018)
<i>Charadrius semipalmatus</i> Bonaparte, 1825	Semipalmated Plover	VN	In	Wet	S	LC/LC/LC	WA4579739	WA2759708	CAFURG 01059	Nascimento (1995) cited in Knak (1999)
<i>Charadrius collaris</i> Vieillot, 1818	Collared Plover	R	In	Wet	D	LC/LC/LC	WA4399614	XC212683		Nascimento (1995) cited in Knak (1999)
<i>Charadrius (aiklandicus)</i> Latham, 1790	Two-banded Plover	VS	In	Wet	S	LC/LC/NT	WA4538953	WA3185298	CAFURG 01118	Nascimento (1995) cited in Knak (1999)
Haematopodidae										
<i>Haematopus palliatus</i> Temminck, 1820	American Oystercatcher	R	In	Wet	S	LC/NT/LC	WA4657459	WA3589099	CAFURG 00064	Nascimento (1995) cited in Knak (1999)
Recurvirostridae										
<i>Himantopus melanurus</i> Vieillot, 1817	White-backed Stilt	R	In	Wet	I	LC/LC/LC	WA4620893	XC510832		
Chionidae										
<i>Chionis albus</i> (Gmelin, 1789)	Snowy Shearbill	OS	Ve	Mar	S	LC/NA/LC	WA2821750			Nascimento (1995) cited in Knak (1999)
Scolopacidae										
<i>Bartramia longicauda</i> (Bechstein, 1812)	Upland Sandpiper	VN	In	Wet	I	LC/LC/LC	WA3686719			
<i>Numenius hudsonicus</i> Latham, 1790	Hudsonian Whimbrel	VN	In	Wet	D	LC/NT/LC	WA4625862			
<i>Numenius phaeopus</i> (Linnaeus, 1758)	Eurasian Whimbrel	ON	In	Wet	D	LC/NA/NA	WA4296376			Meller et al. (2020)
<i>Limosa haemastica</i> (Linnaeus, 1758)	Hudsonian Godwit	VN	In	Wet	D	LC/LC/LC	WA4657484	WA4141521		Nascimento (1995) cited in Knak (1999)
<i>Arenaria interpres</i> (Linnaeus, 1758)	Ruddy Turnstone	VN	In	Wet	D	LC/NT/LC	WA4625887	WA3334925		Nascimento (1995) cited in Knak (1999)



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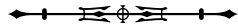
Taxon	English name	Occurrence	Diet	Hab.	Pop. trend	Conservation status (IUCN/BR/RS)	Photo code	Sound code	Voucher specimens	Reference
<i>Calidris canutus</i> (Linnaeus, 1758)	Red Knot	VN	In	Wet	D	NT/CRVEN	WA4675190	WA3334949	MUCIN 375	Nascimento (1995) cited in Knak (1999)
<i>Calidris pugnax</i> (Linnaeus, 1758)	Ruff	ON	In	Wet	D	LC/NA/NA	WA2887887			Pacheco (2000)
<i>Calidris himantopus</i> (Bonaparte, 1826)	Stilt Sandpiper	VN	In	Wet	I	LC/LC/LC	WA4675280			Nascimento (1995) cited in Knak (1999)
<i>Calidris alba</i> (Pallas, 1764)	Sanderling	VN	In	Wet	U	LC/LC/NA	WA4621832	WA3173725	CAFURG 00206	Nascimento (1995) cited in Knak (1999)
<i>Calidris bairdii</i> (Coues, 1861)	Baird's Sandpiper	VN	In	Wet	S	LC/NA/NA	WA4616319			
<i>Calidris minutilla</i> (Vieillot, 1819)	Least Sandpiper	VN	In	Wet	D	LC/DD/LC	WA4584344			Nascimento (1995) cited in Knak (1999)
<i>Calidris fuscicollis</i> (Vieillot, 1819)	White-rumped Sandpiper	VN	In	Wet	D	LC/LC/LC	WA4651637	WA3173731	MCP 19	Nascimento (1995) cited in Knak (1999)
<i>Calidris subruficollis</i> (Vieillot, 1819)	Buff-breasted Sandpiper	VN	In	Wet	D	NT/MJ/NT	WA4630372	WA3185293	CAFURG-01060; MCP 1479	Nascimento (1995) cited in Knak (1999)
<i>Calidris melanotos</i> (Vieillot, 1819)	Pectoral Sandpiper	VN	In	Wet	S	LC/LC/LC	WA4629073	WA3192054		Nascimento (1995) cited in Knak (1999)
<i>Calidris pusilla</i> (Linnaeus, 1766)	Semipalmated Sandpiper	VN	In	Wet	D	NT/EN/NA	WA4577841	WA3199738	MCP 20	Nascimento (1995) cited in Knak (1999)
<i>Limnodromus griseus</i> (Gmelin, 1789)	Short-billed Dowitcher	VN	In	Wet	D	LC/CR/NA	WA3616655			Nascimento (1995) cited in Knak (1999)
<i>Gallinago paraguaiae</i> (Vieillot, 1816)	South American Snipe	R	In	Wet	S	LC/LC/LC	WA4577247	WA3760413		Nascimento (1995) cited in Knak (1999)
<i>Phalaropus tricolor</i> (Vieillot, 1819)	Wilson's Phalarope	VN	In	Wet	I	LC/DD/LC	WA4625865			Nascimento (n. d.) cited in Pereira and Poerschke (2010)
<i>Actitis macularia</i> (Linnaeus, 1766)	Spotted Sandpiper	VN	In	Wet	D	LC/LC/LC	WA4629042	WA3174667		Harrison et al. (2013)
[<i>Tringa solitaria</i> Wilson, 1813]*	[Solitary Sandpiper]	VN	In	Wet	D	LC/LC/LC	WA3556634 ?			Harrison et al. (2013)
<i>Tringa melanoleuca</i> (Gmelin, 1789)	Greater Yellowlegs	VN	In	Wet	S	LC/LC/LC	WA4580954	WA2582058		Nascimento (1995) cited in Knak (1999)



(Continue)

Appendix 1.

Taxon	English name	Occurrence	Diet	Hab.	Pop. trend	Conservation status (IUCN/BR/RS)	Photo code	Sound code	Voucher specimens	Reference
<i>Tringa semipalmata</i> (Gmelin, 1789)	Eastern Willet	VN	In	Wet	S	LC/LC/NA	WA2737908			Nascimento (1995) cited in Knak (1999)
<i>Tringa flavipes</i> (Gmelin, 1789)	Lesser Yellowlegs	VN	In	Wet	D	LC/LC/LC	WA4657486	WA4162347		Nascimento (1995) cited in Knak (1999)
Trinoridae										
<i>Thincororus rumicivorus</i> Eschscholtz, 1829	Least Seedsnipe	VS	Gr	Grass	S	LC/NALC	WA2225520			Nascimento (1995) cited in Knak (1999)
Jacanidae										
<i>Jacana jacana</i> (Linnaeus, 1766)	Wattled Jacana	R	In	Wet/Grass	S	LC/LC/LC	WA3709503	WA2465858		Nascimento (1995) cited in Knak (1999)
Rostratulidae										
<i>Nycticorphes semicollaris</i> (Vieillot, 1816)	South American Painted-Snipe	R	Ve	Wet/Grass	D	LC/DD/LC	WA4613919	WA1175653		Nascimento (n. d.) cited in Pereira and Poerschke (2010)
Scolariidae										
<i>Scolarius chilensis</i> Bonaparte, 1857	Chilean Skua	VS	Ve	Mar	S	LC/NANA	WA3835906			
<i>Scolarius antarcticus</i> (Lesson, 1831)	Brown Skua	VS	Ve	Mar	S	LC/LC/LC	WA3997704			
<i>Scolarius pomarinus</i> (Temminck, 1815)	Pomarine Jaeger	VN	Ve	Mar	S	LC/LC/LC	WA3407910			
<i>Scolarius parasiticus</i> (Linnaeus, 1758)	Parasitic Jaeger	VN	Ve	Mar	S	LC/LC/LC	WA4054594			Nascimento (1995) cited in Knak (1999)
Laridae										
<i>Chroicocephalus maculipennis</i> (Lichtenstein, 1823)	Brown-hooded Gull	R	Ve	Mar	I	LC/LC/LC	WA4657463	WA3817405	MCP 1374	Nascimento (1995) cited in Knak (1999)
<i>Chroicocephalus cirrocephalus</i> (Vieillot, 1818)	Gray-hooded Gull	R	Ve	Mar	S	LC/LC/LC	WA4656313			Nascimento (1995) cited in Knak (1999)
<i>Leucophaeus pipixcan</i> (Wagler, 1831)	Franklin's Gull	ON	Ve	Mar	I	LC/NANA	WA1308876			
<i>Larus atlanticus</i> Olog, 1958	Olog's Gull	VS	Ve	Mar	S	NT/NANA	WA4625863	WA3338100		Nascimento (1995) cited in Knak (1999)



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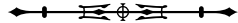
Appendix 1.

Taxon	English name	Occurrence	Diet	Hab.	Pop. trend	Conservation status (IUCN/BRYS)	Photo code	Sound code	Voucher specimens	Reference
<i>Larus dominicanus</i> Lichtenstein, 1823	Kelp Gull	R	Ve	Mar	I	LC/LC/LC	WA4657468	WA3589100	MCP 91; MUCIN 379	Nascimento (1995) cited in Knak (1999)
<i>[Anous stolidus</i> (Linnaeus, 1758)]	[Brown Noddy]	O	Ve	Mar	S	LC/LC/NA				Nascimento (1995) cited in Knak (1999)
<i>Rynchops niger</i> Linnaeus, 1758	Black Skimmer	R	Ve	Wet	D	LC/LC/LC	WA4656332	WA3333713		Nascimento (1995) cited in Knak (1999)
<i>Sterna antillarum</i> Lesson, 1847	Least Tern	VN	Ve	Wet	D	LC/LC/NA	WA3266330			
<i>Sterna supercilialis</i> (Vieillot, 1819)	Yellow-billed Tern	R	Ve	Wet	S	LC/LC/LC	WA4657472	WA3791149		Nascimento (1995) cited in Knak (1999)
<i>Phaetusa simplex</i> (Gmelin, 1789)	Large-billed Tern	R	Ve	Wet	S	LC/LC/LC	WA4630453	WA3817504		Mohr (2003)
<i>Gelochelidon nilotica</i> (Gmelin, 1789)	Gull-billed Tern	R	Ve	Wet	D	LC/LC/DD	WA4538964			Nascimento (1995) cited in Knak (1999)
<i>Chlidonias niger</i> (Linnaeus, 1758)	Black Tern	ON	Ve	Wet	D	LC/NANA	WA2979135			Nascimento (1995) cited in Knak (1999)
<i>Chlidonias leucopterus</i> (Temminck, 1815)	White-winged Tern	ON	In	Wet	S	LC/NANA	WA3353987			
<i>Sterna hirundo</i> Linnaeus, 1758	Common Tern	VN	Ve	Wet	U	LC/LC/LC	WA4621776	WA2759699	CAFURG 01029	Nascimento (1995) cited in Knak (1999)
<i>Sterna paradisaea</i> Pontoppidan, 1763	Arctic Tern	ON	Ve	Wet	D	LC/LC/LC	WA4403946			
<i>Sterna hirsudinacea</i> Lesson, 1831	South American Tern	VS	Ve	Wet	D	LCMU/LC	WA4538940		CAFURG 00137	Nascimento (1995) cited in Knak (1999)
<i>Sterna trudeaui</i> Audubon, 1838	Snowy-crowned Tern	R	Ve	Wet	S	LC/LC/LC	WA4657456	WA3589104		Nascimento (1995) cited in Knak (1999)
<i>Thalasseus acufflavivus</i> (Cabot, 1847)	Cabot's Tern	VN/S	Ve	Wet	S	LC/LCMU	WA4621769		MCP 972	Nascimento (1995) cited in Knak (1999)
<i>Thalasseus maximus</i> (Boddaert, 1783)	Royal Tern	VN/S	Ve	Wet	S	LC/EN/EN	WA4579454			Nascimento (1995) cited in Knak (1999)
SPHENISCIFORMES										
Spheniscidae										
<i>Aptenodytes patagonicus</i> Miller, 1778	King Penguin	O	Ve	Mar	I	LC/NANA				Mohr (2004)



Appendix 1. (Continue)

Taxon	English name	Occurrence	Diet	Hab.	Pop. trend	Conservation status (IUCN/BR/RS)	Photo code	Sound code	Voucher specimens	Reference
<i>Spheniscus magellanicus</i> (Forster, 1781)	Magellanic Penguin	VS	Ve	Mar	D	LC/NT/NT	WA3554119		MCP 1391; MUCIN 150	Nascimento (1995) cited in Knak (1999)
PROCELARIIFORMES										
Diomedidae										
<i>Thalassarche chlororhynchos</i> (Gmelin, 1789)	Yellow-nosed Albatross	P	Om	Mar	D	EN/EN/EN	WA1518966		CAFURG 00561; MUCIN 422	Resende and Leeuwenberg (1987)
<i>Thalassarche melanophris</i> (Temminck, 1828)	Black-browed Albatross	P	Om	Mar	I	LC/NT/EN	WA4453051		MUCIN 037	Nascimento (1995) cited in Knak (1999)
<i>Thalassarche cauta</i> (Gould, 1841)	White-capped Albatross	P	In	Mar	U	NT/NA/NA				Faria et al. (2014)
Oceanitidae										
<i>Oceanites oceanicus</i> (Kuhl, 1820)	Wilson's Storm-Petrel	P	In	Mar	S	LC/LC/LC	WA2994561			Nascimento (1995) cited in Knak (1999)
Procellariidae										
<i>Macronectes giganteus</i> (Gmelin, 1789)	Southern Giant-Petrel	VS	Ve	Mar	I	LC/LC/LC	WA3840557		MCP 856; MUCIN 081	Nascimento (1995) cited in Knak (1999)
<i>Macronectes halli</i> Mathews, 1912	Northern Giant-Petrel	VS	Ve	Mar	I	LC/LC/NA	WA2274101			
<i>[Fulmarus glacialisoides</i> (Smith, 1840)]	[Southern Fulmar]	P	Om	Mar	S	LC/LC/LC			MCP 932	Nascimento (1995) cited in Knak (1999)
<i>[Daption capense</i> (Linnaeus, 1758)]	[Cape Petrel]	P	In	Mar	S	LC/LC/LC				Resende and Leeuwenberg (1987)
<i>Pterodroma mollis</i> (Gould, 1844)	Soft-plumaged Petrel	P	In	Mar	S	LC/NA/NA			CAFURG 00670	
<i>[Pachypūia vittata</i> (Forster, 1777)]	[Broad-billed Prion]	P	Om	Mar	D	LC/NA/NA				Nascimento (1995) cited in Knak (1999)
<i>[Pachypūia desolata</i> (Gmelin, 1789)]	[Antarctic Prion]	P	In	Mar	D	LC/LC/LC				Resende and Leeuwenberg (1987)
<i>Procellaria acquinoctialis</i> Linnaeus, 1758	White-chinned Petrel	P	In	Mar	D	VU/VU/VU	WA981180	XCS556527	CAFURG 00563; MCP 100; MUCIN 433	Nascimento (1995) cited in Knak (1999)
<i>Calonectris borealis</i> (Cory, 1881)	Cory's Shearwater	P	Ve	Mar	U	LC/LC/LC	WA2083578		CAFURG 00652; MCP 873; MUCIN 387	



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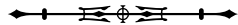
Appendix 1.

Taxon	English name	Occurrence	Diet	Hab.	Pop. trend	Conservation status (IUCN/BYRS)	Photo code	Sound code	Voucher specimens	Reference
<i>Ardenna gravis</i> (O'Reilly, 1818)	Great Shearwater	P	Ve	Mar	S	LC/NA/NA	WA1316304?		CAFURG 00624; MUCIN 345	
<i>Puffinus puffinus</i> (Brünnich, 1764)	Manx Shearwater	P	Ve	Mar	U	LC/LC/LC	WA4123928		MUCIN 160	Mohr (2003)
CICONIIFORMES										
Ciconiidae										
<i>Ciconia maguari</i> (Gmelin, 1789)	Maguari Stork	R	Ve	Wet/ Grass	S	LC/LC/LC	WA4630787			Nascimento (1995) cited in Knak (1999)
[<i>Jabiru mycteria</i> (Lichtenstein, 1819)]	[Jabiru]	O	Ve	Wet/ Grass	U	LC/LC/NA				
<i>Mycteria americana</i> Linnaeus, 1758	Wood Stork	U	Ve	Wet/ Grass	D	LC/LC/LC	WA4657916			Nascimento (1995) cited in Knak (1999)
SULIFORMES										
Fregatidae										
<i>Fregata magnificens</i> Mathews, 1914	Magnificent Frigatebird	O	Ve	Mar	D	LC/LC/NA	WA3997822		CAFURG 00408	Resende and Leeuwenberg (1987)
Sulidae										
<i>Sula leucogaster</i> (Boddaert, 1783)	Brown Booby	O	Ve	Mar	D	LC/LC/NA	WA4270508			Mohr et al. (2005)
Anhingidae										
[<i>Anhinga anhinga</i> (Linnaeus, 1766)]	[Anhinga]	R	Ve	Wet/ For	D	LC/LC/LC				
Phalacrocoracidae										
<i>Nannopterum brasilianum</i> (Gmelin, 1789)	Neotropical Cormorant	R	Ve	Wet	I	LC/LC/LC	WA4656310		MCP 2071	Nascimento (1995) cited in Knak (1999)
PELECANIFORMES										
Ardeidae										
<i>Tigrisoma lineatum</i> (Boddaert, 1783)	Rufescent Tiger-Heron	R	In	Wet/ For	U	LC/LC/LC	WA4203948			
<i>Botaurus pinnatus</i> (Wagler, 1829)	Pinnated Bittern	R	Ve	Wet/ For	S	LC/LC/LC	WA4584353			Nascimento (1995) cited in Knak (1999)



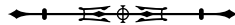
Appendix 1. (Continue)

Taxon	English name	Occurrence	Diet	Hab.	Pop. trend	Conservation status (IUCN/BR/RS)	Photo code	Sound code	Voucher specimens	Reference
<i>Ixobrychus exilis</i> (Vieillot, 1823)	Stripe-backed Bittern	R	In	Wet	S	LC/LC/LC	WA4024151			Nascimento (1995) cited in Knak (1999)
<i>Nycticorax nycticorax</i> (Linnaeus, 1758)	Black-crowned Night-Heron	R	Ve	Wet	D	LC/LC/LC	WA4347322	XCI170797		Nascimento (1995) cited in Knak (1999)
<i>Butorides striata</i> (Linnaeus, 1758)	Striated Heron	BN	Ve	Wet/For	D	LC/LC/LC	WA4560539			Nascimento (1995) cited in Knak (1999)
<i>Bubulcus ibis</i> (Linnaeus, 1758)	Cattle Egret	R	In	Wet/Grass	I	LC/LC/LC	WA4657483			Mohr (2003)
<i>Ardea coccy</i> Linnaeus, 1766	Cocoi Heron	R	Ve	Wet/Grass	S	LC/LC/LC	WA4657482	WA1727219		Nascimento (1995) cited in Knak (1999)
<i>Ardea alba</i> Linnaeus, 1758	Great Egret	R	In	Wet/Grass	U	LC/LC/LC	WA4555901			Nascimento (1995) cited in Knak (1999)
<i>Syrigma sibilatrix</i> (Temminck, 1824)	Whistling Heron	R	In	Wet/Grass	U	LC/LC/LC	WA4335257			Resende and Leeuwenberg (1987)
<i>Egretta thula</i> (Molina, 1782)	Snowy Egret	R	Om	Wet/Grass	I	LC/LC/LC	WA4644928			Nascimento (1995) cited in Knak (1999)
<i>Egretta caerulea</i> (Linnaeus, 1758)	Little Blue Heron	R	In	Wet/Grass	D	LC/LC/NA	WA4342563			
Threskiornithidae										
<i>Plegadis chiri</i> (Vieillot, 1817)	White-faced Ibis	R	In	Wet/Grass	I	LC/LC/LC	WA4657481	WA3731541		Nascimento (1995) cited in Knak (1999)
<i>Phimosus infuscatus</i> (Lichtenstein, 1823)	Bare-faced Ibis	R	In	Wet/Grass	S	LC/LC/LC	WA4577252		MCP 1429	Nascimento (1995) cited in Knak (1999)
<i>Theristicus caerulescens</i> (Vieillot, 1817)	Plumbeous Ibis	R	In	Wet/Grass	S	LC/LC/LC	WA4586710	WA4138162		Pereira and Poerschke (2010)
<i>Theristicus caudatus</i> (Boddaert, 1783)	Buff-necked Ibis	R	In	Wet/Grass	S	LC/LC/LC	WA3669213			
<i>Platalea ajaja</i> Linnaeus, 1758	Roseate Spoonbill	R	Om	Wet	S	LC/LC/LC	WA4657917		MCP 1600	Nascimento (1995) cited in Knak (1999)
CATHARTIFORMES										
Cathartidae										



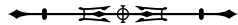
Appendix 1. (Continue)

Taxon	English name	Occurrence	Diet	Hab.	Pop. trend	Conservation status (IUCN/BR/RS)	Photo code	Sound code	Voucher specimens	Reference
<i>Coragyps atratus</i> (Bechstein, 1793)	Black Vulture	R	Ve	Mix	I	LC/LC/LC	WA4528797			Nascimento (1995) cited in Knak (1999)
<i>Cathartes aura</i> (Linnaeus, 1758)	Turkey Vulture	R	Ve	Mix	S	LC/LC/LC	WA4343805			Harrison et al. (2013)
[<i>Cathartes burrovianus</i> Cassin, 1845]	[Lesser Yellow-headed Vulture]	R	Ve	Mix	S	LC/LC/LC				
ACCIPITRIFORMES										
Pandionidae										
<i>Pandion haliaetus</i> (Linnaeus, 1758)	Osprey	VN	Ve	Wet/For	I	LC/LC/NA	WA2467221			
Accipitridae										
<i>Rostrhamus sociabilis</i> (Vieillot, 1817)	Snail Kite	R	In	Wet/Grass	S	LC/LC/LC	WA4577250	WA1249115		Nascimento (1995)
<i>Circus cinereus</i> Vieillot, 1816	Cinereous Harrier	R	Ve	Grass	D	LC/MJU	WA4528774			Maurício & Bencke (2000)
<i>Circus buffoni</i> (Gmelin, 1788)	Long-winged Harrier	R	Ve	Grass/For	D	LC/LC/LC	WA4645152			Harrison et al. (2013)
<i>Accipiter striatus</i> Vieillot, 1808	Sharp-shinned Hawk	R	Ve	For	I	LC/LC/LC	WA1592063			
[<i>Accipiter bicolor</i> (Vieillot, 1817)]	[Bicolored Hawk]	R	Ve	For	D	LC/LC/LC				
[<i>Geranospiza caerulescens</i> (Vieillot, 1817)]	[Crane Hawk]	R	Ve	For	D	LC/LC/LC				
<i>Heterospizias meridionalis</i> (Latham, 1790)	Savanna Hawk	R	Ve	Grass/For	S	LC/LC/LC	WA4528618			
<i>Urubitinga urubitinga</i> (Gmelin, 1788)	Great Black Hawk	R	Ve	Wet/For	D	LC/LC/LC	WA4576662			Harrison et al. (2013)
<i>Rupornis magnirostris</i> (Gmelin, 1788)	Roadside Hawk	R	Ve	For	I	LC/LC/LC	WA4528779	WA4143411		
<i>Geranoaetus albicaudatus</i> (Vieillot, 1816)	White-tailed Hawk	R	Ve	For	U	LC/LC/LC	WA1572283			Pereira and Poerschke (2010)
<i>Buteo brachyurus</i> Vieillot, 1816	Short-tailed Hawk	R	Ve	For	S	LC/LC/LC	WA2531448			



Appendix 1. (Continue)

Taxon	English name	Occurrence	Diet	Hab.	Pop. trend	Conservation status (IUCN/BR/RS)	Photo code	Sound code	Voucher specimens	Reference
STRIGIFORMES										
Tytonidae										
<i>[Iyo furcata</i> (Temminck, 1827)]	[American Barn Owl]	R	Ve	For	S	LC/LC/LC				Nascimento (1995) cited in Knak (1999)
Strigidae										
<i>Bubo virginianus</i> (Gmelin, 1788)	Great Horned Owl	R	Ve	For	S	LC/LC/LC	WA4615724	WA3192081		Pereira and Poerschke (2010)
<i>Athene cucularia</i> (Molina, 1782)	Burrowing Owl	R	Ve	Grass	D	LC/LC/LC	WA4401535			Nascimento (1995) cited in Knak (1999)
<i>[Asio clamator</i> (Viellot, 1808)]	[Striped Owl]	R	Ve	For	D	LC/LC/LC				Nascimento (1995) cited in Knak (1999)
CORACIIFORMES										
Alcedinidae										
<i>Megasceryle torquata</i> (Linnaeus, 1766)	Ringed Kingfisher	R	Ve	Wet/ For	S	LC/LC/LC	WA4652802			Nascimento (1995) cited in Knak (1999)
<i>Chloroceryle amazona</i> (Latham, 1790)	Amazon Kingfisher	R	Om	Wet/ For	D	LC/LC/LC	WA4645267			Nascimento (1995) cited in Knak (1999)
<i>Chloroceryle americana</i> (Gmelin, 1788)	Green Kingfisher	R	Ve	Wet/ For	D	LC/LC/LC	WA4657919			Nascimento (1995) cited in Knak (1999)
GALBULIFORMES										
Bucconidae										
<i>[Nystalus chacuru</i> (Viellot, 1816)]	[White-eared Puffbird]	R	In	Mix	S	LC/LC/LC				
PICIFORMES										
Picidae										
<i>Melanerpes candidus</i> (Otto, 1796)	White Woodpecker	R	Fr	Grass/ For	I	LC/LC/LC	WA2760726			
<i>Colaptes melanochloros</i> (Gmelin, 1788)	Green-barred Woodpecker	R	In	Grass/ For	S	LC/LC/LC	WA4274148			Resende and Leeuwenberg (1987)



Appendix 1. (Continue)

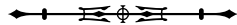
Taxon	English name	Occurrence	Diet	Hab.	Pop. trend	Conservation status (IUCN/BR/RS)	Photo code	Sound code	Voucher specimens	Reference
<i>Colaptes campestris</i> (Vieillot, 1818)	Campo Flicker	R	In	Grass	I	LC/LC/LC	WA4538959			Nascimento (1995) cited in Knak (1999)
FALCONIFORMES										
Falconidae										
<i>Caracara plancus</i> (Miller, 1777)	Crested Caracara	R	Ve	Grass	I	LC/LC/LC	WA4626205		MCP 1161	Nascimento (1995) cited in Knak (1999)
<i>Milvago chimachima</i> (Vieillot, 1816)	Yellow-headed Caracara	R	Ve	Grass	I	LC/LC/LC	WA4164910			Nascimento (1995) cited in Knak (1999)
<i>Milvago chimango</i> (Vieillot, 1816)	Chimango Caracara	R	Ve	Grass	I	LC/LC/LC	WA4501664	WA3185978		Nascimento (1995) cited in Knak (1999)
<i>Falco sparverius</i> Linnaeus, 1758	American Kestrel	R	In	Grass/For	S	LC/LC/LC	WA4577990			Nascimento (1995) cited in Knak (1999)
<i>Falco femoralis</i> Temminck, 1822	Aplomado Falcon	R	Om	Grass/For	D	LC/LC/LC	WA2934513			Resende and Leeuwenberg (1987)
<i>Falco peregrinus</i> Tunstall, 1771	Peregrine Falcon	VN	Ve	Grass/For	I	LC/LC/LC	WA3585930			Nascimento (1995) cited in Knak (1999)
PSITTACIFORMES										
Psittacidae										
<i>Myiopsitta monachus</i> (Boddaert, 1783)	Monk Parakeet	R	Gr	For	I	LC/NA/LC	WA3573132			Resende and Leeuwenberg (1987)
<i>[Pyrhura frontalis</i> (Vieillot, 1817)]	[Maroon-bellied Parakeet]	R	Gr	For	S	LC/LC/LC				
PASSERIFORMES										
Thamnophiidae										
<i>Thamnophilus ruficapillus</i> Vieillot, 1816	Rufous-capped Antshrike	R	In	For	D	LC/LC/LC	WA4241613	XC170811		Nascimento (1995) cited in Knak (1999)
<i>[Thamnophilus caeruleus</i> Vieillot, 1816]	[Variable Antshrike]	R	In	For	D	LC/LC/LC				Pereira and Poerschke (2010)
Conopophagidae										
<i>[Conopophaga lineata</i> (Wied, 1831)]	[Rufous Gnateater]	R	In	Grass	S	LC/LC/LC				



(Continue)

Appendix 1.

Taxon	English name	Occurrence	Diet	Hab.	Pop. trend	Conservation status (IUCN/BR/RS)	Photo code	Sound code	Voucher specimens	Reference
Formicariidae										
<i>Geositta cucularia</i> (Vieillot, 1816)	Common Miner	R	In	Grass	D	LC/LC/LC	WA4591314	WA4427954		Nascimento (1995) cited in Knak (1999)
Furnariidae										
<i>Furnarius rufus</i> (Gmelin, 1788)	Rufous Hornero	R	In	Grass/For	I	LC/LC/LC	WA4124596	XC170795		Nascimento (1995) cited in Knak (1999)
<i>[Lochmias nematura</i> (Lichtenstein, 1823)]	[Sharp-tailed Streamcreeper]	R	In	Grass	D	LC/LC/LC				
<i>Phleocryptes melanops</i> (Vieillot, 1817)	Wren-like Rushbird	R	In	Grass	D	LC/LC/LC	WA4576398	WA3533130		Nascimento (1995) cited in Knak (1999)
<i>Limnornis curvirostris</i> Gould, 1839	Curve-billed Reedhaunter	R	In	Grass	S	LC/LC/NT	WA4415722	WA4142053		Nascimento (1995) cited in Knak (1999)
<i>Cinclodes fuscus</i> (Vieillot, 1818)	Buff-winged Cinclodes	VS	In	Grass	S	LC/LC/LC	WA4027316	WA3790967		
<i>Syndactyla rufosuperciliata</i> (Lafresnaye, 1832)	Buff-browed Foliage-gleaner	R	In	Grass/For	S	LC/LC/LC	WA3373723	XC170810		Pereira and Poerschke (2010)
<i>[Phacelodromus striaticollis</i> (d'Orbigny & Lafresnaye, 1838)]	[Freckle-breasted Thornbird]	R	In	Grass/For	S	LC/LC/LC				
<i>Phacelodromus ferrugineigula</i> (Pelzeln, 1858)	Orange-breasted Thornbird	R	In	For	S	LC/LC/LC	WA3842387	WA3280625		
<i>Anumbius annumbi</i> (Vieillot, 1817)	Firewood-Gatherer	R	In	Grass/For	I	LC/LC/LC	WA4621788	WA4135962		Nascimento (1995) cited in Knak (1999)
<i>Asithenes hudsoni</i> (Sclater, 1874)	Hudson's Canastero	R	In	Grass	D	NT/MU/MU	WA4629044	WA3589093		
<i>[Limnocittes rectirostris</i> (Gould, 1839)]	[Straight-billed Reedhaunter]	R	In	Grass	D	NT/NT/NT				
<i>Limnocittes sulphuriferus</i> (Burmester, 1869)	Sulphur-throated Spinetail	R	In	Grass	D	LC/NT/NT	WA4419609	WA2596569		Maurício & Bencke (2000)
<i>[Cranioleuca pyrrhophia</i> (Vieillot, 1818)]	[Stripe-crowned Spinetail]	R	In	For	S	LC/LC/LC				



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Appendix 1.

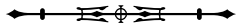
Taxon	English name	Occurrence	Diet	Hab.	Pop. trend	Conservation status (IUCN/BR/RS)	Photo code	Sound code	Voucher specimens	Reference
<i>Cranioleuca obsolera</i> (Reichenbach, 1853)	Olive Spinetail	R	In	For	D	LC/LC/LC	WA4645972	WA3186455		Harrison et al. (2013)
<i>Spartonoica maluroides</i> (d'Orbigny & Lafresnaye, 1837)	Bay-capped Wren-Spinetail	R	In	For	D	NT/LC/LC	WA4675189	WA4162141		Maurício & Bencke (2000)
<i>Certhiaxis cinnamomeus</i> (Gmelin, 1788)	Yellow-chinned Spinetail	R	In	For	D	LC/LC/LC	WA4615720	XC146678		Nascimento (1995) cited in Knak (1999)
[<i>Synallaxis ruficapilla</i> Vieillot, 1819]	[Rufous-capped Spinetail]	R	In	Grass/For	S	LC/LC/LC				
<i>Synallaxis spixi</i> Sclater, 1856	Spix's Spinetail	R	In	Grass/For	I	LC/LC/LC	WA3296565	XC170805		Nascimento (1995) cited in Knak (1999)
[<i>Synallaxis frontalis</i> Pelzeln, 1859]*	[Sooty-fronted Spinetail]	R	In	Grass/For	I	LC/LC/LC				
Tachuridae										
<i>Tachuris rubrigastra</i> (Vieillot, 1817)	Many-colored Rush Tyrant	R	In	Wet/Grass	S	LC/LC/LC	WA4528940	WA3191989		Nascimento (1995) cited in Knak (1999)
Rhyncocyliidae										
[<i>Phylloscartes ventralis</i> (Temminck, 1824)]	[Mottle-cheeked Tyrannulet]	R	In	For	D	LC/LC/LC				
[<i>Poecilatriccus plumbeiceps</i> (Lafresnaye, 1846)]	[Ochre-faced Tody-Flycatcher]	R	In	For	S	LC/LC/LC				
Tyrannidae										
<i>Camptostoma obsoletum</i> (Temminck, 1824)	Southern Beardless-Tyrannulet	R	In	For	S	LC/LC/LC	WA4177876	XC146975		Nascimento (1995) cited in Knak (1999)
<i>Elaenia flavogaster</i> (Thunberg, 1822)	Yellow-bellied Elaenia	R	Om	For	S	LC/LC/LC	WA3375375			Pereira and Poerschke (2010)
[<i>Elaenia spectabilis</i> Pelzeln, 1868]	[Large Elaenia]	BN	Om	For	D	LC/LC/LC				
<i>Elaenia panivirostris</i> Pelzeln, 1868	Small-billed Elaenia	BN	In	For	S	LC/LC/LC	WA4575209	XC170800		Harrison et al. (2013)
<i>Elaenia mesoleuca</i> (Deepe, 1830)	Olivaceous Elaenia	BN	Om	For	D	LC/LC/LC	WA2401824			



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Appendix 1.

Taxon	English name	Occurrence	Diet	Hab.	Pop. trend	Conservation status (IUCN/BR/RS)	Photo code	Sound code	Voucher specimens	Reference
<i>Elaenia obscura</i> (d'Orbigny & Lafresnaye, 1837)	Small-headed Elaenia	R	Om	For	S	LC/LC/LC	WA4560324	XC170798		Nascimento (1995) cited in Knak (1999)
<i>Phyllornis fasciatus</i> [Thunberg, 1822]	[Planalto Tyrannulet]	R	In	For	D	LC/LC/LC				
<i>Polystictus pectoralis</i> (Vieillot, 1817)	Bearded Tachuri	R	In	For	D	NT/NT/EN	WA3101995			
<i>Pseudocolaptes sclateri</i> (Oustalet, 1892)	Crested Doradito	R	In	For	S	LC/LC/LC	WA4500600			
<i>Pseudocolaptes flaviventris</i> (d'Orbigny & Lafresnaye, 1837)	Warbling Doradito	R	In	For	D	LC/LC/LC	WA4571986			
<i>Pseudocolaptes acutipennis</i> (Sclater & Salvin, 1873)	Subtropical Doradito	U	In	For	D	LC/NALC	WA1972873			
<i>Serpophaga nigriceps</i> (Vieillot, 1817)	Sooty Tyrannulet	R	In	Grass	S	LC/LC/LC	WA4586229	WA3521580		Nascimento (1995) cited in Knak (1999)
<i>Serpophaga subcristata</i> (Vieillot, 1817)	White-crested Tyrannulet	R	In	For	S	LC/LC/LC	WA4255844	WA3186522		Harrison et al. (2013)
<i>Serpophaga griseicapilla</i> Straneck, 2008	Straneck's Tyrannulet	VS	In	For	S	LC/LC/LC	WA3337770	WA2594011		
<i>Myiarchus swainsoni</i> Cabanis & Heine, 1859	Swainson's Flycatcher	BN	In	For	S	LC/LC/LC	WA4089173	XC170809		Harrison et al. (2013)
<i>Myiarchus tyrannulus</i> (Statius Muller, 1776)	Brown-crested Flycatcher	R	In	For	I	LC/LCMU	WA3861668			
<i>Pitangus sulphuratus</i> (Linnaeus, 1766)	Great Kiskadee	R	Om	Grass/For	I	LC/LC/LC	WA4655965	XC170757		Nascimento (1995) cited in Knak (1999)
<i>Machetornis rixosa</i> (Vieillot, 1819)	Cattle Tyrant	R	In	Grass	S	LC/LC/LC	WA4620899	WA3335005		Nascimento (1995) cited in Knak (1999)
<i>Myiodynastes maculatus</i> (Statius Muller, 1776)	Streaked Flycatcher	BN	Om	For	S	LC/LC/LC	WA3228555			
<i>[Megarynchus pitangua</i> (Linnaeus, 1766)]	[Boat-billed Flycatcher]	R	In	For	S	LC/LC/LC				
<i>Tyrannus melancholicus</i> Vieillot, 1819	Tropical Kingbird	BN	In	For	I	LC/LC/LC	WA4656318			Nascimento (1995) cited in Knak (1999)



Appendix 1. (Continue)

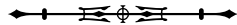
Taxon	English name	Occurrence	Diet	Hab.	Pop. trend	Conservation status (IUCN/BR/RS)	Photo code	Sound code	Voucher specimens	Reference
<i>Tyrannus savana</i> (Daudin, 1802)	Southern Fork-tailed Flycatcher	BN	In	Grass/For	S	LC/LC/LC	WA4620890			Nascimento (1995) cited in Knak (1999)
<i>Tyrannus tyrannus</i> (Linnaeus, 1758)	Eastern Kingbird	ON	In	For	D	LC/LC/LC	WA2974647			
<i>Griseotyrannus aurantioatrocristatus</i> (d'Orbigny & Lafresnaye, 1837)	Crowned Slaty Flycatcher	BN	In	For	S	LC/LC/LC	WA3591340			
<i>Arundinicola leucocephala</i> (Linnaeus, 1764)	White-headed Marsh Tyrant	R	In	Grass/For	S	LC/LC/LC	WA4222478			
<i>Pyrrocephalus rubinus</i> (Boddaert, 1783)	Vermilion Flycatcher	BN	In	For	I	LC/LC/LC	WA4560479			Nascimento (1995) cited in Knak (1999)
<i>[Gubernites yetapa</i> (Vieillot, 1818)]	[Streamer-tailed Tyrant]	R	In	Grass	S	LC/LC/NT				
<i>Heteroxolmis dominicanus</i> (Vieillot, 1823)	Black-and-white Monjita	R	In	For	D	VU/NU/EN	WA1755708			
<i>Myiophobus fasciatus</i> (Status Muller, 1776)	Bran-colored Flycatcher	BN	In	For	I	LC/LC/LC	WA2894124	XC170793		Nascimento (1995) cited in Knak (1999)
<i>Lathrotriccus euleri</i> (Cabanis, 1868)	Euler's Flycatcher	BN	In	For	S	LC/LC/LC	WA2877808	WA2809650		Pereira and Poerschke (2010)
<i>Satrapa icterophrys</i> (Vieillot, 1818)	Yellow-browed Tyrant	R	In	For	S	LC/LC/LC	WA4406165			Nascimento (1995) cited in Knak (1999)
<i>Muscisaxicola maclovianus</i> (Garnot, 1826)	Dark-faced Ground-Tyrant	OS	In	Grass	D	LC/NANA	WA4252050			
<i>Lessonia rufa</i> (Gmelin, 1789)	Austral Negrito	R	In	Grass	S	LC/LC/LC	WA4453058			Nascimento (1995) cited in Knak (1999)
<i>Hymenops perspicillatus</i> (Gmelin, 1789)	Spectacled Tyrant	R	In	Grass	S	LC/LC/LC	WA4613921	WA3589098		Nascimento (1995) cited in Knak (1999)
<i>Knipolegus cyanostris</i> (Vieillot, 1818)	Blue-billed Black-Tyrant	R	In	For	D	LC/LC/LC	WA3374692			Nascimento (1995) cited in Knak (1999)
<i>Xolmis irupero</i> (Vieillot, 1823)	White Monjita	R	In	Grass	S	LC/LC/LC	WA4611609			Nascimento (1995) cited in Knak (1999)



(Continue)

Appendix 1.

Taxon	English name	Occurrence	Diet	Hab.	Pop. trend	Conservation status (IUCN/BR/RS)	Photo code	Sound code	Voucher specimens	Reference
Vireonidae										
<i>Cyclarhis gujanensis</i> (Gmelin, 1789)	Rufous-browed Peppershrike	R	In	For	D	LC/LC/LC	WA2982452	XC146974		Resende and Loeuwenberg (1987)
<i>Vireo chiri</i> (Vieillot, 1817)	Chivi Vireo	BN	In	For	S	LC/LC/LC	WA3216166			
Hirundinidae										
<i>[Pygochelidon cyanoleuca (Vieillot, 1817)]*</i>	[Blue-and-white Swallow]	R	In	For	D	LC/LC/LC				Pereira and Poerschke (2010)
<i>Alopochelidon fucata</i> (Temminck, 1822)	Tawny-headed Swallow	R	In	For	S	LC/LC/LC	WA4494627			Nascimento (1995) cited in Knak (1999)
<i>Stelgidopteryx ruficollis</i> (Vieillot, 1817)	Southern Rough-winged Swallow	R	In	For	S	LC/LC/LC	WA1153022			Nascimento (1995) cited in Knak (1999)
<i>Progne tapera</i> (Linnaeus, 1766)	Brown-chested Martin	BN	In	For	D	LC/LC/LC	WA4577243	WA3334979		Nascimento (1995) cited in Knak (1999)
<i>Progne chalybea</i> (Gmelin, 1789)	Gray-breasted Martin	BN	In	For	S	LC/LC/LC	WA4620942			Nascimento (1995) cited in Knak (1999)
<i>[Tachycineta albiventer (Boddaert, 1783)]</i>	[White-winged Swallow]	BN	In	For	S	LC/LC/LC				Nascimento (1995) cited in Knak (1999)
<i>Tachycineta leucorrhoa</i> (Vieillot, 1817)	White-rumped Swallow	R	In	For	I	LC/LC/LC	WA4656309	XC510849		Nascimento (1995) cited in Knak (1999)
<i>Tachycineta leucopyga</i> (Meyen, 1834)	Chilean Swallow	VS	In	For	I	LC/LC/LC	WA4576130			Nascimento (1995) cited in Knak (1999)
<i>Riparia riparia</i> (Linnaeus, 1758)	Bank Swallow	VN	In	For	D	LC/LC/LC	WA4458767			
<i>Hirundo rustica</i> Linnaeus, 1758	Barn Swallow	VN	In	For	D	LC/LC/LC	WA4652794			Nascimento (1995) cited in Knak (1999)
<i>[Petrochelidon pyrrhonota (Vieillot, 1817)]</i>	[Cliff Swallow]	VN	In	For	I	LC/LC/LC				Pereira and Poerschke (2010)
Troglodytidae										
<i>Troglodytes musculus</i> Naumann, 1823	Southern House Wren	R	In	For	I	LC/LC/LC	WA3296570	XC147047		Nascimento (1995) cited in Knak (1999)
Poliptilidae										
<i>Poliptila dumicola</i> (Vieillot, 1817)	Masked Gnatcatcher	R	In	Grass	D	LC/LC/LC	WA3759786	XC147043		Nascimento (1995) cited in Knak (1999)



Appendix 1. (Continue)

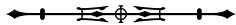
Taxon	English name	Occurrence	Diet	Hab.	Pop. trend	Conservation status (IUCN/BR/RS)	Photo code	Sound code	Voucher specimens	Reference
Turdidae										
[<i>Turdus flavipes</i> Vieillot, 1818]	[Yellow-legged Thrush]	BN	Fr	For	S	LC/LC/LC				
[<i>Turdus leucomelas</i> Vieillot, 1818]*	[Pale-breasted Thrush]	R	In	Grass	S	LC/LC/LC				
<i>Turdus rufigentris</i> Vieillot, 1818	Rufous-bellied Thrush	R	Om	Grass	S	LC/LC/LC	WA2683881	XC170813		Nascimento (1995) cited in Knak (1999)
<i>Turdus amaurochalinus</i> Cabanis, 1850	Creamy-bellied Thrush	R	Fr	For	S	LC/LC/LC	WA4069289	XC170537		Nascimento (1995) cited in Knak (1999)
<i>Turdus subalaris</i> (Seeböhm, 1887)	Eastern Slaty Thrush	BN	Fr	For	U	LC/LC/LC	WA3228621	WA3194004		
<i>Turdus albicollis</i> Vieillot, 1818	White-necked Thrush	R	In	Grass	D	LC/LC/LC	WA3228932	XC147036		Nascimento (1995) cited in Knak (1999)
Mimidae										
<i>Mimus saturninus</i> (Lichtenstein, 1823)	Chalk-browed Mockingbird	R	Om	Grass	S	LC/LC/LC	WA4613920	XC146977		Nascimento (1995) cited in Knak (1999)
<i>Mimus triurus</i> (Vieillot, 1818)	White-banded Mockingbird	VS	Om	Grass	U	LC/LC/LC	WA4579418	WA3790895		Nascimento (1995) cited in Knak (1999)
Passeridae										
<i>Passer domesticus</i> (Linnaeus, 1758)	House Sparrow	R	Gr	Grass/For	D	LC/NA/NA	WA3090720			Nascimento (n. d.) cited in Pereira and Poerschke (2010)
Motacillidae										
<i>Anthus chii</i> Vieillot, 1818	Yellowish Pipit	R	In	Grass	D	LC/LC/LC	WA4645259	XC146814	AMNH 822129	Nascimento (1995) cited in Knak (1999)
<i>Anthus furcatus</i> d'Orbigny & Lafresnaye, 1837	Short-billed Pipit	R	In	Grass	S	LC/LC/LC	WA4557546	WA3284709	AMNH 228144	Nascimento (1995) cited in Knak (1999)
<i>Anthus correndera</i> Vieillot, 1818	Correndera Pipit	R	In	Grass	S	LC/LC/LC	WA4657479	WA4178295	MCP 3378	Nascimento (1995) cited in Knak (1999)
<i>Anthus hellmayri</i> Hartert, 1909	Hellmayr's Pipit	R	In	Grass	S	LC/LC/LC	WA4657475	WA4141525		
Fringillidae										
<i>Spinus magellanicus</i> (Vieillot, 1805)	Hooded Siskin	R	Gr	Grass/For	S	LC/LC/LC	WA4542509	WA2801603		Nascimento (1995) cited in Knak (1999)



(Continue)

Appendix 1.

Taxon	English name	Occurrence	Diet	Hab.	Pop. trend	Conservation status (IUCN/BR/RS)	Photo code	Sound code	Voucher specimens	Reference
<i>Euphonia chlorotica</i> (Linnaeus, 1766)	Purple-throated Euphonia	R	Fr	For	S	LC/LC/LC	WA3371984			
Passerellidae										
<i>Ammodramus humeralis</i> (Bosc, 1792)	Grassland Sparrow	R	Gr	Grass	S	LC/LC/LC	WA4048777	XC170764		Nascimento (1995) cited in Knak (1999)
<i>Zonotrichia capensis</i> (Statius Muller, 1776)	Rufous-collared Sparrow	R	Gr	Grass	I	LC/LC/LC	WA4121895	XC170814		Nascimento (1995) cited in Knak (1999)
Icteridae										
<i>Leistes superciliosus</i> (Bonaparte, 1850)	White-browed Meadowlark	R	In	Grass	S	LC/LC	WA4657487	XC147019		Nascimento (1995) cited in Knak (1999)
[<i>Cacicus chrysopterus</i> (Vigors, 1825)]	[Golden-winged Cacique]	R	Om	For	S	LC/LC/LC				
<i>Icterus pyrrhopterus</i> (Vieillot, 1819)	Variable Oriole	R	In	For	S	LC/LC/LC	WA4407465	WA1956158		Harrison et al. (2013)
<i>Molothrus rufoaxillaris</i> Cassin, 1866	Screaming Cowbird	R	Gr	Grass	S	LC/LC/LC	WA3204246	XC170756		Harrison et al. (2013)
<i>Molothrus bonariensis</i> (Gmelin, 1789)	Shiny Cowbird	R	In	Grass	I	LC/LC/LC	WA4347324			Nascimento (1995) cited in Knak (1999)
<i>Amblyramphus holosericeus</i> (Scopoli, 1786)	Scarlet-headed Blackbird	R	Om	Grass	S	LC/LC/LC	WA4571985	WA2627720		Nascimento (1995) cited in Knak (1999)
[<i>Gnorimopsar chopi</i> (Vieillot, 1819)]	[Chopi Blackbird]	R	Om	Grass	S	LC/LC/LC				
<i>Agelaioides badius</i> (Vieillot, 1819)	Grayish Baywing	R	In	Grass/For	S	LC/LC/LC	WA4347346			Nascimento (1995) cited in Knak (1999)
<i>Agelaius thilius</i> (Molina, 1782)	Yellow-winged Blackbird	R	Om	Grass	S	LC/LC/LC	WA4616316	WA3334985		Nascimento (1995) cited in Knak (1999)
<i>Chrysomus ruficapillus</i> (Vieillot, 1819)	Chestnut-capped Blackbird	R	Gr	Grass	S	LC/LC/LC	WA4586716	XC147014		Nascimento (1995) cited in Knak (1999)
<i>Pseudoleistes guirahuro</i> (Vieillot, 1819)	Yellow-rumped Marshbird	R	Om	Grass	S	LC/LC/LC	WA3498930			
<i>Pseudoleistes virescens</i> (Vieillot, 1819)	Brown-and-yellow Marshbird	R	Om	Grass	S	LC/LC/LC	WA4657918	WA4423055		Nascimento (1995) cited in Knak (1999)



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Appendix 1.

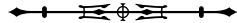
Taxon	English name	Occurrence	Diet	Hab.	Pop. trend	Conservation status (IUCN/BR/RS)	Photo code	Sound code	Voucher specimens	Reference
Parulidae										
<i>Geothlypis aquinoctialis</i> (Gmelin, 1789)	Masked Yellowthroat	R	In	Grass/For	S	LC/LC/LC	WA4204205	WA2794872		Resende and Leeuwenberg (1987)
<i>Serophaga pitaiayumi</i> (Vieillot, 1817)	Tropical Parula	R	In	For	D	LC/LC/LC	WA4557535	XC147033		Nascimento (1995) cited in Knak (1999)
<i>Myiothlypis leucoblephara</i> (Vieillot, 1817)	White-browed Warbler	R	In	For	D	LC/LC/LC	WA3771359	WA2794644		Nascimento (1995) cited in Knak (1999)
<i>Basileuterus culicivorus</i> (Deppé, 1830)	Golden-crowned Warbler	R	In	For	D	LC/LC/LC	WA4329680	XC146826		Nascimento (1995) cited in Knak (1999)
Cardinalidae										
<i>Piranga flava</i> (Vieillot, 1822)	Hepatic Tanager	R	In	For	U	LC/LC/LC	WA3223898			
<i>[Cyanoloxia glaucocerulea</i> (d'Orbigny & Lafresnaye, 1837)]*	[Glaucous-blue Grosbeak]	R	Om	For	D	LC/LC/LC				
<i>Cyanoloxia brissonii</i> (Lichtenstein, 1823)	Ultramarine Grosbeak	R	Om	For	U	LC/LC/LC	WA4580953	XC146677		Harrison et al. (2013)
Thraupidae										
<i>Embernagra platensis</i> (Gmelin, 1789)	Great Pampa-Finch	R	Om	For	S	LC/LC/LC	WA4645261	WA2627691		
<i>Emberizoides herbicola</i> (Vieillot, 1817)	Wedge-tailed Grass-Finch	R	Om	Grass	D	LC/LC/LC	WA1219301			
<i>[Emberizoides ypiranganus</i> Ihering & Ihering, 1907]	[Lesser Grass-Finch]	R	Om	For	S	LC/LC/LC				
<i>Salator similis</i> d'Orbigny & Lafresnaye, 1837	Green-winged Saltator	R	In	For	D	LC/LC/LC	WA4152846	XC146735		Pereira and Poerschke (2010)
<i>[Salator aurantirostris</i> Vieillot, 1817]	[Golden-billed Saltator]	R	Fr	Grass/For	U	LC/LC/LC				
<i>Coereba flaveola</i> (Linnaeus, 1758)	Bananaquit	R	Fr	For	D	LC/LC/LC	WA2539553	XC146976		Nascimento (1995) cited in Knak (1999)
<i>[Volatinia jacarina</i> (Linnaeus, 1766)]	[Blue-black Grassquit]	R	Om	Grass	I	LC/LC/LC				



(Continue)

Appendix 1.

Taxon	English name	Occurrence	Diet	Hab.	Pop. trend	Conservation status (IUCN/BR/RS)	Photo code	Sound code	Voucher specimens	Reference
<i>Conospingus cucullatus</i> (Statius Muller, 1776)	Red-crowned Finch	R	Om	For	S	LC/LC/LC	WA3495028	XC471303		Nascimento (1995) cited in Knak (1999)
<i>[Tachyphonus coronatus</i> (Vieillot, 1822)]*	[Ruby-crowned Tanager]	R	In	For	S	LC/LC/LC				Pereira and Poerschke (2010)
<i>Sporophila lineola</i> (Linnaeus, 1758)	Lined Seedeater	BN	Gr	For	S	LC/LC/NA	WA2636986			
<i>Sporophila collaris</i> (Boddaert, 1783)	Rusty-collared Seedeater	R	Gr	For	S	LC/LC/NT	WA4526826			Nascimento (1995) cited in Knak (1999)
<i>Sporophila caerulescens</i> (Vieillot, 1823)	Double-collared Seedeater	BN	Gr	Grass/For	I	LC/LC/LC	WA3680920			Nascimento (1995) cited in Knak (1999)
<i>[Sporophila angolensis</i> (Linnaeus, 1766)]	[Chestnut-bellied Seed-Finch]	R	Gr	For	I	LC/LC/EN				
<i>Poospiza nigrorufa</i> (d'Orbigny & Lafresnaye, 1837)	Black-and-rufous Warbling-Finch	R	Om	Grass	S	LC/LC/LC	WA3222211	XC471310		Nascimento (1995) cited in Knak (1999)
<i>Donacospiza albifrons</i> (Vieillot, 1817)	Long-tailed Reed Finch	R	Om	Grass	S	LC/LC/LC	WA3395083			Nascimento (1995) cited in Knak (1999)
<i>Microspingus cabanisi</i> Bonaparte, 1850	Gray-throated Warbling-Finch	R	Gr	For	D	LC/LC/LC	WA3543300	WA1956159		
<i>Sicalis flaveola</i> (Linnaeus, 1766)	Saffron Finch	R	Gr	For	S	LC/LC/LC	WA4189399	XC170759		Nascimento (1995) cited in Knak (1999)
<i>Sicalis luteola</i> (Sparman, 1789)	Grassland Yellow-Finch	R	Gr	For	I	LC/LC/LC	WA4621784	WA1288494		Resende and Leeuwenberg (1987)
<i>[Haplospiza unicolor</i> Cabanis, 1851]	[Uniform Finch]	R	Gr	Grass	D	LC/LC/LC				
<i>Pipraeidea melanonota</i> (Vieillot, 1819)	Fawn-breasted Tanager	R	Om	For	S	LC/LC/LC	WA2576504			
<i>Raenina bonariensis</i> (Gmelin, 1789)	Blue-and-yellow Tanager	R	In	For	S	LC/LC/LC	WA4089424	WA1894586		Nascimento (1995) cited in Knak (1999)
<i>Stephanophorus diadematus</i> (Temminck, 1823)	Diademed Tanager	R	Om	For	S	LC/LC/LC	WA4142046	XC170806		Nascimento (1995) cited in Knak (1999)



Appendix 1. (Conclusion)

Taxon	English name	Occurrence	Diet	Hab.	Pop. trend	Conservation status (IUCN/BR/RS)	Photo code	Sound code	Voucher specimens	Reference
<i>Paroaria coronata</i> (Miller, 1776)	Red-crested Cardinal	R	In	For	S	LC/LC/NA	WA4578461	WA2465865		Nascimento (1995) cited in Knak (1999)
<i>[Paroaria capitata</i> (d'Orbigny & Lafresnaye, 1837)]	[Yellow-billed Cardinal]	R	In	For	S	LC/LC/LC				
<i>Thraupis sayaca</i> (Linnaeus, 1766)	Sayaca Tanager	R	Om	For	S	LC/LC/LC	WA4121894	XC170804		Nascimento (1995) cited in Knak (1999)
<i>[Thraupis palmarum</i> (Wied, 1821)]	[Palm Tanager]	R	Fr	For	S	LC/LC/LC				



