Bird assemblages from western Sierras Grandes and Traslasierra Valley in central Argentina: an important area for conservation of Chacoan and mountain birds

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ABSTRACT: Between 1970 and 1980, many ornithological prospections were made in central Argentina. With this work we intend to fill some of the existing gaps regarding such knowledge. We conducted bird surveys in the central-western region of Córdoba province. We identified 240 bird species (63% of province’s avifauna) belonging to 48 families: 10 of which are considered under some threat category, 37 are migrants, and two are endemic to the region. Throughout a qualitative analysis of ordination, we identified three clusters of environments that share similar bird composition. Among those, the most dissimilar group was composed of aquatic environments, whereas the two other groups included wooded and anthropized environments and high altitude environments, respectively. The high bird richness recorded in a relatively small region, encompassing a variety of environments, place upon this area a high bird conservation value. The inclusion of this area in the system of “Important Bird Areas” (IBAs) may prompt protection actions.

KEY-WORDS: altitudinal gradient, bird diversity, endemic birds, environmental heterogeneity, IBAs, threatened birds.
face presents short and steep slopes, where numerous streams run down, some of which shape the basin of Río de los Sauces and Allende Lake, commonly under the denomination “Traslasierra Valley” (Carignano et al. 2014, Fig. 1). Río de los Sauces alluvial valley has a plant community typical of Chaco lowland Forest, yet the mountain slopes also comprise a variety of contrasting vegetation units (i.e. woodland, shrubland, grassland; see description in study site section) in accordance with the altitudinal gradient (600 to 2700 m a.s.l.). This particular topography allows for the development of a highly heterogeneous landscape in a relatively small area, and the variety of environments hosts a great bird diversity. For example, the mountain tops include birds with an Andean origin, whereas lowland areas have Chacoans species (Nores & Yzurieta 1983, Nores & Cerana 1990). These characteristics confer western Sierras Grandes-Comechingones and Traslasierra Valley a high value for bird conservation.

The main goals of this study were to (1) study avian richness and composition while comparing bird assemblages among different habitats, and to (2) assess the feasibility of including this region into the system of IBAs. Specifically, we seek to know the avian richness and avian community composition at western Sierras Grandes-Comchegones and Traslasierra Valley, and to identify the similarities between bird assemblages among different habitat types. Our study aims to improve the understanding of the distribution of avian species across different habitats in this heterogeneous area, which historically has been understudied by ornithologists, in order to highlight the importance of this area for the conservation of birds in Lowland and Mountain Chaco region.

**METHODS**

**Study area**

Surveys were conducted in an area of Sierras Grandes delimited in the north by the rivers Río Chico de Nono and Río de los Sauces and the coast of Allende Lake. In the east, the area was limited by the Sierras Grandes-Comchingones summit. The west and south limits correspond to the meridian 65°03’W and the parallel 32°10’S, respectively, comprising an area of 464.75 km² (Fig. 1).

The physiognomy of plant communities and main plant species observed along Traslasierra Valley and western Sierras Grandes-Comchingones system from lowest to the highest altitude (sensu Luti et al. 1979, Fig. 2) included:

- **Lowland Chaco woodland (500–800 m a.s.l.):**
  - this area is dominated by several tree species such as *Aspidosperma quebracho-blanco*, *Prosopis flexuosa*, *Prosopis chilensis*, *Ziziphus mistol* and *Cercidium australe*. Shrubs commonly found in the area include *Larrea divaricata*, *Mimozyganthus carinatus*, *Maytenus spinosa*, and *Acacia furcatispina* (Cabido et al. 1992).

- **Mountain Chaco woodland (800–1350 m a.s.l.):**
  - characterized by the dominating presence of *Lithraea molleoides* and, to a lesser extent, *Celtis ehrenbergiana*, *Bouganvillea stipitata*, *Schinopsis haenkeana*, and *Xanthopylum coco*. Among the shrubs, dominant species include *Flourensia* sp. and *Condalia buxifolia* (Cabido et al. 1998).

- **Mountain shrubland (1350–1700 m a.s.l.):**
  - this community is characterized by the lack of trees, the dominant shrub being *Heterothalamus alienus*, and to

![Figure 1](image-url)
a lesser extent *Acacia caven*, *Baccharis* sp., and many Poaceae species.

Mountain grassland and *Polylepis* forest (1700–2800 m a.s.l.): consists of a mosaic of *Polylepis australis* woodland (mainly in humid and pronounced ravines), tussock grasslands (dominated by *Poa stuckertii*, *Deyeuxia hieronymi*), grazing lawn (dominated by *Alchemilla-Carex lawn*), granite outcrops, and eroded areas with exposed rock surface (Cingolani et al. 2004, 2008).

We assigned surveyed birds to different habitat types considering the following environment classification based on previous descriptions (see Fig. 2): 1 - artificial lake; 2 - river; 3 - stream; 4 - lowland forest; 5 - mountain forest; 6 - mountain shrubland; 7 - mountain grassland; 8 - *Polylepis* forest; 9 - agricola field; and 10 - urban area.

### Data collection

Three different survey techniques were used to prevent biases that may be caused by one single technique (Bibby et al. 2000): (a) detection of species presence through direct observations with binoculars and aural identification of songs, (b) recording of species presence by means of capture with mist nets and (c) recording of species presence via interviews with local residents. Scientific nomenclature is in accordance with South American Classification Committee (SACC–American Ornithologists’ Union, Remsen-Jr. et al. 2015). The conservation status of each bird species follows López-Lanús et al. (2008).

(a) Between January 2011 and December 2015,
we conducted approximately 80 surveys in the study area and registered bird species visually and aurally. Each survey consisted in walks during time-periods of high bird activity, from sunrise to midday and from 5:00 to sunset. In addition, we conducted nocturnal walks using playback to detect nocturnal species of Caprimulgidae and Strigiformes. Sixty percent of those surveys were conducted in areas corresponding to lowland and mountain Chaco woodland (data from a collateral specific study, Vergara-Tabares 2017), and areas of Allende artificial Lake and Río de los Sauces.

(b) During the autumn-winter 2014, we used mist nets in three sectors of mountain woodland. We also used mist nets during 20–29 April, 10–19 July, and 20–29 September at three sites [Los Hornillos (31°54′5.10″S; 64°58′28.92″W), San Javier (32°1′42.77″S; 65°0′13.34″W) and Luyaba (32°10′4.44″S; 65°0′29.35″W)]. Nets were mounted in sites with intense bird activity and were separated by at least 50 m (i.e. near the streams and/or between patches of arboreal vegetation). We opened four 12-m nets from sunrise to 12:00 h and from 16:00 h to sunset during three successive days (approximately 108 h/net per site).

(c) Interviews: some local residents, mostly rural inhabitants, were interviewed and questioned about the bird species they had identified to be in the region. In order to minimize the confusion generated by common bird names (which vary from one region to another), we used photo books of Chacoan birds with their scientific and common names to avoid misleading recognitions. This methodology allowed us to check in loco whether the species mentioned in the interviews were expected to occur in this region of study, focusing on those species that may have suffered local extinctions in many sites of their ranges (e.g. Gubernatrix cristata, Strix chacoensis and Pheucticus aureoventris).

Data analysis

We graphically explored the relationship among the different habitats and bird assemblage composition using UPGMA based on Jaccard’s qualitative index of similarity. Qualitative indexes were estimated on a presence-absence matrix of birds registered in the different habitats. We used the Vegan package (Oksanen et al. 2007) in the free user analysis platform R (R Core Team 2012).

RESULTS

A total of 240 species of birds belonging to 48 families were recorded (Appendix I). The most represented families were Tyrannidae, Furnariidae, and Thraupidae with 35, 24, and 24 species, respectively. For the non-passerines, the most represented families were Accipitridae, Ardeidae, Picidae, and Rallidae with 12, 8, 8, and 8 species respectively. Forty-five species occurred exclusively within one type of environment (Fig. 3A, Appendix I) and two species occurred in seven non-aquatic environments (i.e. Turdus chiquamano and Zonotrichia capensis). According to López-Lanús et al. (2008), we recorded two “Endangered” species (Gubernatrix cristata only through interviews and Buteogallus coronatus), two threatened species, and six “Vulnerable” species (although S. chacoensis only through interviews, Appendix I).

Graphical exploration with UPGMA showed three groups of habitats based on bird assemblage composition (Table 1, Fig. 4). Two similar groups included: 1) mountain shrubland, mountain grassland, and Polylepis forest (“highland habitats” hereafter), and 2) lowland forest, mountain forest, agricola field, and urban areas (“lowland habitats” hereafter). The third, less similar, group included the following aquatic habitats: artificial lake, stream, and river (“aquatic habitats” hereafter). We

Figure 3. (A) Number of bird species recorded at each environment of our study site. The light gray section of the bar indicates the number of species that inhabits exclusively that particular environment and the dark gray section shows the number of species that are found in more than one environment. (B) Proportion of exclusive (light gray bars) and shared (dark gray bars) species per group of habitats (number of species in bold numbers). Group of habitats are illustrated in Fig. 4.
Table 1. Similarity matrix of Jaccard index among habitats surveyed in western slopes of Sierras Grandes-Comechingones and Traslasierra Valley, Argentina.

| Lowland forest | Mountain forest | Mountain shrubland | Mountain grassland | Polylepis forest | Agricola field | Urban area | Stream | River | Artificial lake |
|----------------|-----------------|--------------------|--------------------|------------------|----------------|------------|--------|-------|----------------|
| Lowland forest | 1.00             |                    |                    |                  |                |            |        |       |                |
| Mountain forest| 0.59             | 1.00               |                    |                  |                |            |        |       |                |
| Mountain shrubland | 0.14          | 0.22               | 1.00               |                  |                |            |        |       |                |
| Mountain grassland | 0.05           | 0.11               | 0.50               | 1.00             |                |            |        |       |                |
| Polylepis forest | 0.01            | 0.07               | 0.29               | 0.29             | 1.00           |            |        |       |                |
| Agricola field | 0.30             | 0.21               | 0.17               | 0.11             | 0.04           | 1.00       |        |       |                |
| Urban area     | 0.28             | 0.32               | 0.24               | 0.12             | 0.07           | 0.47       | 1.00   |       |                |
| Stream         | 0.00             | 0.00               | 0.00               | 0.00             | 0.00           | 0.04       | 0.00   | 1.00  |                |
| River          | 0.00             | 0.00               | 0.00               | 0.02             | 0.00           | 0.03       | 0.01   | 0.36  | 1.00           |
| Artificial lake| 0.00             | 0.00               | 0.00               | 0.01             | 0.00           | 0.01       | 0.11   | 0.60  | 1.00           |

DISCUSSION

Noteworthy species

Below we present some information and comments about noteworthy birds species registered in the study area, including species threatened by local activities, species included in threat categories, and endemic species. Some of this information may be relevant for conservation purposes (Di Giacomo 2005).

Andean Condor (*Vultur gryphus*): its range formerly stretched along the total length of the Andes mountains, from Venezuela to Tierra del Fuego, including Sierras Centrales of Córdoba and San Luis (Houston et al. 2016). We frequently observed this nearly-threatened species in our study site (Fig. 5A, B). In a few opportunities, we observed groups of 40–50 individuals feeding on dead horses or cows in areas above 1400 m a.s.l. Although a population decline has been reported for this species in Ecuador, Peru and Bolivia, the species appears to be common and the population seems to be stable in Argentina (Houston et al. 2016). However, in Argentina, lead poisoning (from ammunition used to hunt game) is potentially a new and increasing threat for the species (Saggese et al. 2009, Lambertucci et al. 2011).

Chaco Eagle (*Buteogallus coronatus*): We recorded two individuals of this eagle during 2011 in the central area of our study region (Fig. 5D) and we found the first active nest for Córdoba province (previous to this study there were only hints but no confirmation that the species would potentially nest in the region, Torres et al. 2006). On 03 February 2014, we found one nest in the southern portion of the prospected area with one nestling in advanced state of development (Fig. 5C). We were able to record many feeding events by both parents (see Capdevielle et al. 2015). The nest consisted of a platform built on a Molle de Beber (*Lithraea molleoides*) located in...
the mountain forest (at ~950 m a.s.l.). During the two following years, a pair of *B. coronatus* produced a new nestling in the same nest. Distribution of *B. coronatus* in western and north central Argentina extends south to Río Negro, La Pampa, and southern Buenos Aires (Collar *et al.* 1992, Gonnnet & Blendinger 1998). This eagle occurs in open and semi open habitats consisting of mixed open grassland, bushland, savannah, marsh and open woodland in lowland areas (Maceda 2007). In view of its low population density and the number of threats faced by this species, the IUCN Red List conservation status of the Chaco Eagle is “Endangered” (BirdLife International 2016).

Spot-winged Falconet (*Spiziapteryx circumcincta*): this monotypic species is considered endemic to the Chaco region, but is also present in monte shrubs of Río

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**Figure 5.** Noteworthy bird species registered at our study area: (A) group of juvenile individuals of Andean Condors; (B) adults Andean Condors, a female on the left and a male on the right; (C) Crowned Eagle fledglings in their nest. First records of a Crowned Eagle nest for Córdoba province; (D) one of the Crowned Eagle pair that produced fledglings; (E) group of Burrowing Parrots that conform a colony in Los Barrancos Wildlife Refuge; (F) male of Black-bodied Woodpecker, the second woodpecker most abundant in mountain forests (Vergara-Tabares, unpub. data); (G) Olrog’s Cinclodes, one of two endemic species in central mountains of Córdoba province; (H) male of Black-backed Grosbeak, a species threatened by illegal captures and traffic for cage birds. Photo author: D.L. Vergara-Tabares.
Negro, Argentina (Bierregaard et al. 2016). This species is not globally threatened (Bierregaard-Jr. et al. 2016), but López-Lanús et al. (2008) categorized this falconet as “Vulnerable” in Argentina. Its status is virtually unknown, although it is considered locally common in Córdoba, where its habitat has been seriously devastated in the region (Zak & Cabido 2002). We recorded this species in lowland forests and, in lower frequencies, in mountain forests mainly during winter.

Burrowing Parrot (Cyanoliseus patagonus): this species includes 4 subspecies, where C. p. conlara (Nores & Yzurieta 1983) occurs in San Luis and Córdoba provinces. Masello et al. (2011) evidenced that this subspecies represents a hybrid population of C. p. patagonus and C. p. andinus, and this is the most genetically diverse of the four C. patagonus taxonomic groups. This population was identified as one of four management units for conservation, being important for their genetic characteristics and low population size (1700 individuals; Masello et al. 2015). Due to behavioral attributes, we were able to register four noteworthy colonies of Burrowing Parrots in our study area. The largest colony occurs within the limits of Los Barrancos Wildlife Refuge, and the others (similar in size), occur in burrows at Río de los Sauces and in ravines at mountain area between 900 and 1000 m a.s.l. However, smaller groups were recorded feeding along all the woody areas in our study region (except in Polylepis forests, Fig. 5E).

Chaco Owl (Strix chacoensis): the geographic distribution of the Chaco Owl overlaps approximately 90% of the overall Chaco region (Trejo et al. 2012). This owl inhabits both dense and semi-open vegetation on hilly and flat areas (Cracraft 1985). Despite its wide distribution, it is listed as “Vulnerable” in Argentina (e.g. López-Lanús et al. 2008, Trejo et al. 2012). López-Lanús et al. (2008) consider S. chacoensis moderately sensitive to anthropogenic habitat changes. Habitat conversion and fragmentation is probably the main threat to this species (Holt et al. 2016). In Córdoba province, the species has been recorded in Chancani Provincial Park and we documented its presence in lowland forest via local interviews. Although we conducted night searches of S. chacoensis using playbacks, we were unable to detect this species.

Black-bodied Woodpecker (Dryocopus schulzi): this woodpecker (Fig. 5F) is endemic to the Chaco region, and it is considered “Nearly Threatened” (López-Lanúz et al. 2008, Lammertink 2014, Winkler & Christie 2016). Despite its wide distribution across the Chaco region, this species is generally rare on a local scale (Madroño & Pearman 1992). However, on a regional scale in the western face of Sierras Grandes-Comechingones, we commonly recorded this woodpecker in mountain forests habitats from Las Chacas to Luyaba ~ close to their southern limit ~ (Vergara-Tabares, unpub. data). Madroño & Pearman (1992) suggest the existence of two main populations, one in central Paraguay and the other one in Córdoba province. However, Yzurieta (1995) has stated that this woodpecker is rare in Córdoba, contrary to our observations in the study area. Big woodpeckers, such as D. schulzi, are sensitive to logging and deforestation, as trees are required to build their nests (Lammertink 2014). Therefore, urbanization of pristine mountain forests may present a new threat for these locally abundant populations of D. schulzi. Human activity may not only threaten the survival of D. schulzi populations, but also the presence or persistence of other woodpecker species, including the southernmost populations of Campephilus leucopogon (Mikušiński 2006), an uncommon species in Córdoba (Yzurieta 1995).

Cordoba Cinclodes (Cinclodes comechingonus): this species breeds only in the isolated Sierras Grandes, occupying mainly streams in mountain grasslands and Polylepis forests (Remsen-Jr. 2016a). We recorded this species in all mountain grasslands and Polylepis forests. During autumn-winter, we observed individuals at lower altitudes (~900 m a.s.l.). Although this species inhabits a restricted range, it is not considered globally threatened because the habitat occupied by this species is relatively free from human disturbances other than cattle grazing (Cingolani et al. 2004).

Olrog’s Cinclodes (Cinclodes olrogi): this species (Fig. 5G) is restricted to the Sierras Grandes, mirroring the distribution of the Cordoba Cinclodes (Remsen-Jr. 2016b). In winter, we recorded C. olrogi in streams at lower elevations. This species is less common than C. comechingonus, and it is more strictly associated with streams.

Cinnamon Warbling-finch (Poopiza ornata): this is a species endemic to Argentina (Mazar-Barnett & Pearman 2001). In summer, P. ornata occur in a strip that extends from northwestern to southeastern Argentina, moving to sites located further north and east of its summer distribution during the winter (Cuetto et al. 2011). We have obtained scarce records, only in lowland forests, during our surveys. Although this species is a common inhabitant of arid lowland woodlands and shrubs in the Monte Desert, and taller shrubs in xeric Andean foothill ravines, some individuals may arrive at lowland Chaco Forest (Trasilierra Valley) in winter (Jaramillo 2016b). Poopiza ornata was classified as “Least Concern” by IUCN (2011). However, López-Lanús et al. (2008) have listed this species as “Vulnerable”, due to its restricted distribution, the imposing risk by illegal wildlife trade, and the lack of accurate information about its population size and dynamics.

Yellow Cardinal (Gubernatrix cristata): this species historically occurred in north and central Argentina,
extreme southeastern Brazil and Uruguay. Currently, this species is one of the few Neotropical birds that has suffered a massive and negative effect from the caged bird trade. Consequently, remaining populations of this cardinal are small and fragmented (Jaramillo 2016a). During the 1980’s, Miátel et al. (1994) registered some individuals in several areas inside and adjacent to our study site. Based on this observation, Nores (1996) considered this species under recovery in Córdoba province. We performed specific searches for this species using playback without success. Contrasting with our negative results, the interviews with rural inhabitants reveal the presence of G. cristata until five years ago.

Black-backed Grosbeak (Pheucticus aureoventris): this species (Fig. 5H) is distributed in south Peru, south and east Bolivia and northwestern Argentina (Brewer & de Juana 2014). Although most of the populations are sedentary, there is some evidence that suggests a pattern of local movements at the geographical end of its range of distribution that includes our study site (Chebez 2009). In accordance with this evidence, our observational records for this species were obtained only during the breeding season in spring-summer, only in ravines from 900 to 2000 m a.s.l. (i.e. mountain woodlands and Polylepis forests). In addition, we found two nests during December 2012 near Los Hornillos stream. Although López-Lanús et al. (2008) considered P. aureoventris a non-threatened species in Argentina, at a local scale its presence is rare, making this species especially valuable to be trapped and caged as a pet. We also directly observed extraction of nestlings for bird trade, activity that would reduce the reproductive success of its wild populations (López-Lanús et al. 2008).

Ultramarine Grosbeak (Cyanocompsa brissonii): this species has a large range of distribution (Brewer 2016) and is considered a quite common species. In Argentina, it is also considered a quite common and non-threatened species (López-Lanús et al. 2008). Although this species is not included in any threat category, the loss and fragmentation of its habitat and the illegal capture and trade of individuals as cage birds represent a conservation problem. In fact, this species is one of the most common illegally traded species (Ferreira & Glock 2004, Alves et al. 2010, Richard et al. 2010). We observed captive individuals in numerous houses throughout our study area.

Bird assemblages and human threats

In this study, we recorded 240 bird species in several bird assemblages from western Sierras Grandes and Traslasierra Valley in central Argentina. Considering that in Córdoba province there are 376 cited species (Nores et al. 1996), it is noteworthy that the study area (0.28% of the provincial territory) hosts 63.6% of the overall avifauna of Córdoba province. Moreover, not only is it remarkable for the rich composition of its avifauna, but also for the presence of some threatened species, such as B. coronatus at both regional and global scales. Another important observation is the common presence of the “Near Threatened” D. schulzi in mountain forests and endemic and restricted-range species such as C. comechingonous and C. obrogi that highlight the conservation value of the area for birds.

The great bird richness found in the area is likely due to two main factors. First, the evident altitudinal gradient in the study area (from 600 m a.s.l to 2800 m a.s.l) allows for the existence of several contrasting vegetation units. This heterogeneous landscape is able to host different bird assemblages, such as grassland birds, woody birds, and aquatic birds. Secondly, although in Córdoba province the expansion of the agricultural frontier for the past 30 years is alarming, especially in the north, east and south of the province (Silvetti 2012, Hoyos et al. 2013, Cáceres 2015), this process in the west of the province is less evident, leaving large forest areas which still host a rich diversity of birds. Nevertheless, agricultural and urban encroachments are recent threats to this area, particularly the replacement of natural cover by soybean crops under artificial irrigation (Fehlenberg et al. 2017).

We identified three groups of habitats based on similarity of bird assemblages. The most dissimilar group corresponded to aquatic habitats (i.e. stream, river, and artificial lake). The other two groups were composed of terrestrial habitats: one included wooded and anthropized habitats at low altitude between 600 and 1300 m a.s.l. (i.e. lowland forest, mountain forest, agricola field, and urban area) and the other group included highland habitats above 1300 m a.s.l. (i.e. mountain shrubland, mountain grassland, and Polylepis forest). Aquatic habitats had the greatest proportion of exclusive species, a pattern explained by the presence of aquatic specialized species (see Fig. 3B). Though, notably, this group also presents the lowest richness. Despite the fact that lowland habitats do not show a high proportion of exclusive species, these habitats present the highest richness (see Fig. 3A, B). Given the pattern of habitat aggregation and great number of exclusive species in each group, we considered that these entities might represent discrete units of conservation that would be susceptible to different human threats and worthy of protection.

Each group of habitats and their associated avifauna seem to suffer from different threats. For instance, in the lowland habitats, forests are replaced by agricultural habitats (lowland forest) and urban habitats (lowland and mountain forests). Furthermore, highland habitats experience anthropogenic fires and over-grazing of grasslands that contribute to the increasing erosion rates (Argañaraz et al. 2015). Finally, the capture of some
species for caged bird trade is a widely distributed and common activity in cities such as Villa Dolores and Mina Clavero (pers. obs.). Because of the high avifauna richness of the region, as well as its numerous threats, it is necessary to conduct educational and awareness campaigns focused on the local community to highlight the importance of the area for forest and bird conservation. The study area represents an important remnant of lowland and mountain Chaco Forest in a province with only 3% of the original forest remaining (Hoyos et al. 2013). This area has been identified as one with priority for endemic conservation for the Great Chaco region (Nori et al. 2016). The inclusion of the area in the system of Important Bird Areas (IBAs) is imperative to preserve this particular and threatened ecosystem in Córdoba province and its rich and unique bird community. We believe this inclusion would contribute to the development of bird and environment conservation and education programs.

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List of bird species recorded at western Sierras Grandes-Comechingones and Traslasierra Valley. We also included the environment type that each species inhabits and the category of conservation. The number of environment represents: 1 - lowland Chaco woodland; 2 - mountain Chaco woodland; 3 - Romerillo shrubland; 4 - mountain grassland; 5 - Polylepis forest; 6 - agricola field; 7 - urbanized area; 8 - stream; 9 - river; and 10 - artificial lake. Status abbreviations: LC - “Least Concern”; EN - “Endangered”; VU - “Vulnerable”, AM - Threatened. Abundance classification: C - Common; U - Uncommon; R - Rare; and A - Accidental. Seasonal presence: Y - Year-round; S - Summer presence; W - Winter presence; and A - Altitudinal movements.

| Taxon                        | English Name            | Environment | Status | Abundance | Seasonal Presence |
|------------------------------|-------------------------|-------------|--------|-----------|-------------------|
| Tinamidae                    |                         |             |        |           |                   |
| Nothura darwini              | Darwin’s Nothura        | 1, 6        | LC     | C         | Y                 |
| Nothoprocta cinerascens      | Brushland Tinamou      | 1, 2        | LC     | C         | Y                 |
| Nothoprocta pentlandii       | Andean Tinamou         | 2, 3, 4     | LC     | C         | Y                 |
| Nothura maculosa             | Spotted Nothura         | 1           | LC     | C         | Y                 |
| Crypturellus tataupa         | Tataupa Tinamou        | 1, 2        | LC     | U         | Y                 |
| Eudromia elegans             | Elegant-crested Tinamou| 1           | VU     | R         | Y                 |
| Podicipedidae                |                         |             |        |           |                   |
| Tachybaptus dominicus        | Least Grebe             | 10          | LC     | A         | Y                 |
| Podiceps major               | Great Grebe             | 10          | LC     | C         | Y                 |
| Podilymbus podiceps          | Pied-billed Grebe       | 9, 10       | LC     | C         | Y                 |
| Rollandia rolland            | White-tufted Grebe      | 9, 10       | LC     | C         | Y                 |
| Phalacrocoracidae            |                         |             |        |           |                   |
| Phalacrocorax brasilianus    | Neotropic Cormorant     | 9, 10       | LC     | C         | Y                 |
| Ardeidae                     |                         |             |        |           |                   |
| Ardea cocoi                  | White-necked Heron      | 9, 10       | LC     | U         | Y                 |
| Ardea alba                   | Great Egret             | 9, 10       | LC     | C         | Y                 |
| Egretta thula                | Snowy Egret             | 8, 9        | LC     | C         | Y                 |
| Bubulcus ibis                | Cattle Egret            | 6, 8, 9     | LC     | C         | Y                 |
| Syrigma siblatrix            | Whistling Heron         | 6, 8        | LC     | C         | Y                 |
| Butorides striata            | Striated Heron          | 8, 9        | LC     | U         | Y                 |
| Nycticorax nycticorax        | Black-crowned Night-heron| 8, 9        | LC     | C         | Y                 |
| Izobrychus involutus         | Stripe-backed Bittern   | 9, 10       | LC     | R         | Y                 |
| Threskiornithidae            |                         |             |        |           |                   |
| Phimosus infuscatus          | Bare-faced Ibis         | 9, 10       | LC     | U         | Y                 |

Associate Editor: Gustavo S. Cabanne.
| Taxon                  | English Name          | Environment | Status | Abundance | Seasonal Presence |
|-----------------------|-----------------------|-------------|--------|-----------|------------------|
| *Plegadis chihi*       | White-faced Ibis      | 9, 10       | LC     | C         | Y                |
| *Theristicus caudatus* | Buff-necked Ibis      | 4, 9        | LC     | U         | S                |
| **Cathartidae**        |                       |             |        |           |                  |
| *Vultur gryphus*       | Andean Condor         | 4           | VU     | C         | Y                |
| *Cathartes aura*       | Turkey Vultur         | 1, 2        | LC     | C         | Y                |
| *Coragyps atratus*     | Black Vultur          | 1, 2, 3, 4, 6, 7 | LC | C         | Y                |
| **Anatidae**           |                       |             |        |           |                  |
| *Anas bahamensis*      | White-cheeked Pintail | 10          | LC     | C         | Y                |
| *Anas georgica*        | Yellow-billed Pintail | 8, 9, 10    | LC     | C         | Y                |
| *Anas flavirostris*    | Speckled Teal         | 8, 9, 10    | LC     | C         | Y                |
| *Anas platyrhynchos*   | Red Shoveler          | 10          | LC     | C         | Y                |
| *Oxyura vittata*       | Lake Duck             | 9, 10       | LC     | U         | Y                |
| *Heteronetta atricapilla* | Black-headed Duck     | 10          | LC     | R         | Y                |
| *Netta peposaca*       | Rosy-billed Pochard   | 10          | LC     | C         | Y                |
| **Accipitridae**       |                       |             |        |           |                  |
| *Geranostoma melanoleucus* | Black-chested Buzzard-eagle | 2, 3, 4 | LC | C         | Y                |
| *Geranostoma polyosoma* | Red-backed Hawk       | 2, 3, 4     | LC     | C         | Y                |
| *Geranostoma albicaudatus* | White-tailed Hawk     | 4           | LC     | U         | Y                |
| *Elanus leucurus*      | White-tailed Kite     | 1           | LC     | U         | S                |
| *Buteo magnirostris*   | Roadside Hawk         | 1, 2        | LC     | C         | Y                |
| *Circus buffoni*       | Long-winged Harrier   | 3, 4        | LC     | C         | Y                |
| *Circus cinereus*      | Cinereous Harrier     | 1, 4        | LC     | C         | Y                |
| *Parabuteo unicinctus* | Bay-winged Hawk       | 1           | LC     | R         | Y                |
| *Rostrhamus sociabilis* | Snail Kite            | 9, 10       | LC     | C         | Y                |
| *Accipiter striatus*   | Sharp-shinned Hawk    | 2           | LC     | C         | Y                |
| *Accipiter bicolore*   | Bicolorated Hawk      | 1, 2        | LC     | U         | Y                |
| *Buteogallus coronatus* | Crowned Eagle         | 1, 2        | EN     | R         | Y                |
| **Falconidae**         |                       |             |        |           |                  |
| *Caracara plancus*     | Southern Crested-caracara | 1, 2, 3, 4, 6, 7 | LC | C         | Y                |
| *Milvago chimango*     | Chimango Caracara     | 1, 2, 3, 4, 6, 7 | LC | C         | Y                |
| *Spizia spizia*        | Spot-winged Falconet  | 1, 2        | VU     | C         | Y                |
| *Falco peregrinus*     | Peregrine Falcon      | 1, 2, 7     | LC     | C         | Y                |
| *Falco femoralis*      | Aplomado Falcon       | 1, 6        | LC     | C         | Y                |
| *Falco sparrowius*     | American Kestrel      | 1, 2, 6     | LC     | C         | Y                |
| **Rallidae**           |                       |             |        |           |                  |
| *Aramides cajaneus*    | Gray-necked Wood-rail | 2, 8        | LC     | C         | Y                |
| *Paradriacus sanguinolentus* | Plumbeous Rail        | 8           | LC     | C         | Y                |
| *Gallinula galeata*    | Common Gallinule      | 8, 9        | LC     | C         | Y                |
| *Gallinula melanops*   | Spot-flanked Gallinule | 10          | LC     | U         | Y                |
| *Fulica arima*         | Red-gartered Coot     | 9, 10       | LC     | C         | Y                |
| *Fulica leucoperta*    | White-winged Coot     | 9, 10       | LC     | C         | Y                |
| *Fulica rufifrons*     | Red-fronted Coot      | 9, 10       | LC     | C         | Y                |
| *Fulica ardesiaca*     |                        | 10          | LC     | A         |                  |
| Taxon                | English Name          | Environment | Status | Abundance | Seasonal Presence |
|---------------------|-----------------------|-------------|--------|-----------|------------------|
| Aramidae            |                        |             |        |           |                  |
| Aramus guarauna     | Limpkin               | 9, 10       | LC     | U         | Y                |
| Cariamidae          |                        |             |        |           |                  |
| Chugna burmeisteri  | Black-legged Seriema  | 1, 2        | LC     | U         | Y                |
| Jacanidae           |                        |             |        |           |                  |
| Jacana jacana       | Wattled Jacana        | 10          | LC     | C         | Y                |
| Recurvirostridae    |                        |             |        |           |                  |
| Himantopus mexicanus| American Stilt        | 9, 10       | LC     | C         | Y                |
| Charadriidae        |                        |             |        |           |                  |
| Vanellus chilensis  | Southern Lapwing      | 4, 6, 7, 9, 10 | LC | C | Y |
| Charadrius collaris | Collared Plover       | 9           | LC     | U         | Y                |
| Scopacidae          |                        |             |        |           |                  |
| Tringa melanoleuca  | Greater Yellowlegs    | 9, 10       | LC     | U         | Y                |
| Tringa flaviceps    | Lesser Yellowlegs     | 9, 10       | LC     | U         | Y                |
| Calidris bairdii    | Baird’s Sandpiper     | 10          | LC     | U         | S                |
| Gallinago gallinago | Common Snipe          | 3, 4        | LC     | U         | Y                |
| Columbidae          |                        |             |        |           |                  |
| Columba livia       | Rock Pigeon           | 6, 7        | LC     | C         | Y                |
| Patagioenas picazuro| Picazo Pigeon         | 1, 2, 6     | LC     | C         | Y                |
| Patagioenas maculosa| Spot-winged Pigeon    | 1, 2, 6, 7  | LC     | C         | Y                |
| Zenaida auriculata  | Eared Dove            | 1, 2, 3, 6, 7 | LC | C | Y |
| Columbina picui     | Picui Ground-dove     | 1, 2, 6, 7  | LC     | C         | Y                |
| Leptotila verreauxi | White-tipped Dove     | 2, 6, 7     | LC     | C         | Y                |
| Psittacidae         |                        |             |        |           |                  |
| Thoctocercus acuticauda| Blue-crowned Parakeet| 1, 2, 7     | LC     | C         | Y                |
| Cyanoliseus patagonus| Burrowing Parrot      | 1, 2        | LC     | U         | Y                |
| Myiopitta monachus  | Monk Parakeet         | 1, 2, 6, 7  | LC     | C         | Y                |
| Psilopsiagon aymara | Gray-hooded Parakeet  | 2, 3, 4, 5, 7 | LC | C | A |
| Amazona aestiva     | Turquoise-fronted Parrot| 1, 2       | LC     | R         | Y                |
| Cuculidae           |                        |             |        |           |                  |
| Coccyzus melacoryphus| Dark-billed Cuckoo    | 1, 2        | LC     | U         | S                |
| Guira guira        | Guira Cuckoo          | 1, 2, 6, 7  | LC     | C         | Y                |
| Tapera naevia      | Striped Cuckoo        | 1, 2, 6     | LC     | C         | S                |
| Tytonidae           |                        |             |        |           |                  |
| Tyto alba          | Barn Owl              | 1, 2, 6, 7  | LC     | U         | Y                |
| Strigidae           |                        |             |        |           |                  |
| Bubo virginianus    | Great Horned Owl      | 2, 3, 4     | LC     | U         | Y                |
| Megascops choliba   | Tropical Screech-owl  | 1, 2        | LC     | C         | Y                |
| Glauucidium brasilianum| Ferruginous Pygmy-owl| 1, 2        | LC     | C         | Y                |
| Pseudoscops clamator| Striped Owl           | 1           | LC     | R         | Y                |
| Athene cunicularia | Burrowing Owl         | 1, 2, 6, 7  | LC     | C         | Y                |
| Sririx chacoensis   | Chaco Owl             | 1           | AM     | R         | Y                |
| Asio flammeus      | Short-eared Owl       | 4, 6        | LC     | U         | Y                |
| Taxon                     | English Name                  | Environment | Status | Abundance | Seasonal Presence |
|--------------------------|-------------------------------|-------------|--------|-----------|------------------|
| **Caprimulgidae**        |                               |             |        |           |                  |
| *Systellura longirostris*| Band-winged Nightjar         | 1, 2        | LC     | U         | Y                |
| *Hydropsalis torquata*   | Scissor-tailed Nightjar       | 1, 2        | LC     | C         | Y                |
| *Setopagis parvula*      | Little Nightjar               | 1           | LC     | C         | Y                |
| **Apodidae**             |                               |             |        |           |                  |
| *Streptoprogne zonaris*  | White-collared Swift         | 2, 3, 4, 5, | LC     | U         | Y                |
| *Aeronautes andecolus*   | Andean Swift                 | 2, 3, 4, 5  | LC     | C         | Y                |
| **Trochilidae**          |                               |             |        |           |                  |
| *Heliomaster furcifer*   | Blue-tufted Starthroat       | 1, 2        | LC     | C         | Y                |
| *Sephanoides senphaniodes*| Green-backed Firecrown       | 2           | LC     | A         |                  |
| *Chlorostilbon lucidus*  | Glittering-bellied Emerald   | 1, 2, 6, 7  | LC     | C         | Y                |
| *Sappho sparganurus*     | Red-tailed Comet             | 2, 3, 4, 5, 7| LC | C         | A                |
| **Alcedinidae**          |                               |             |        |           |                  |
| *Chloroceryle amazona*   | Amazon Kingfisher            | 8, 9, 10    | LC     | U         | Y                |
| *Chloroceryle americana* | Green Kingfisher             | 8, 9, 10    | LC     | U         | Y                |
| *Megaceryle torquata*    | Ringed Kingfisher            | 8, 9, 10    | LC     | C         | Y                |
| **Bucconidae**           |                               |             |        |           |                  |
| *Nystalus maculatus*     | Spot-backed Puffbird         | 1, 2        | LC     | C         | Y                |
| **Picidae**              |                               |             |        |           |                  |
| *Colaptes campestris*    | Campo Flicker                | 1, 2, 3, 6, 7| LC | C         | Y                |
| *Colaptes melanochloros* | Green-barred Woodpecker      | 1, 2, 3, 7  | LC     | C         | Y                |
| *Melanerpes cactorum*    | White-fronted Woodpecker     | 1           | LC     | C         | Y                |
| *Melanerpes candidus*    | White Woodpecker             | 1, 2        | LC     | U         | Y                |
| *Veniliornis mixtus*     | Checkered Woodpecker         | 1, 2, 7     | LC     | C         | Y                |
| *Picumnus cirratus*      | White-barred Piculet         | 1, 2        | LC     | U         | Y                |
| *Campephilus leucopogon* | Cream-backed Woodpecker      | 1, 2, 7     | LC     | U         | Y                |
| *Dryocopus schulzi*      | Black-bodied Woodpecker      | 2, 7        | AM     | C         | Y                |
| **Furnariidae**          |                               |             |        |           |                  |
| *Geositta rufigennis*    | Rufous-banded Miner          | 3, 4, 5     | LC     | U         | Y                |
| *Upucerthia dumetaria*   | Scale-throated Earthcreeper  | 1, 2        | LC     | U         | Y                |
| *Tarphonomus certhioides*| Chaco Earthcreeper           | 1, 2        | LC     | C         | Y                |
| *Cinclodes atacamensis*  | White-winged Cinclodes       | 8, 9        | LC     | C         | A                |
| *Cinclodes comechingonus*| Cordoba Cinclodes            | 8, 9        | VU     | C         | A                |
| *Cinclodes fuscus*       | Buff-winged Cinclodes        | 6, 8, 9     | LC     | C         | W                |
| *Cinclodes olrogi*       | Olrog's Cinclodes            | 8, 9        | VU     | C         | A                |
| *Furnarius rufus*        | Rufous Hornero               | 1, 2, 3, 6, 7| LC | C         | Y                |
| *Furnarius cristatus*    | Crested Hornero              | 1, 6        | LC     | C         | Y                |
| *Coryphistera alaudina*  | Lark-like Brushrunner        | 1, 2, 6, 7  | LC     | C         | Y                |
| *Phleocryptes melanops*  | Wren-like Rushbird           | 9, 10       | LC     | U         | Y                |
| *Craniicoela pyropha*    | Stripe-crowned Spinetail     | 1, 2        | LC     | C         | Y                |
| *Asthenes baeri*         | Short-billed Canastero       | 1, 2        | LC     | C         | Y                |
| *Asthenes pyrrholoeuca*  | Sharp-billed Canastero       | 1, 2        | LC     | U         | Y                |
| *Asthenes modesta*       | Cordilleran Canastero        | 3, 4        | LC     | C         | Y                |
| Taxon                     | English Name                  | Environment | Status | Abundance | Seasonal Presence |
|--------------------------|-------------------------------|-------------|--------|-----------|-------------------|
| Asthenes sclateri        | Puna Canastero                | 3, 4        | LC     | C         | Y                 |
| Anumbius annumbi         | Firewood-gathered             | 1, 6        | LC     | C         | Y                 |
| Synallaxis frontalis     | Sooty-fronted Spinetail       | 1, 2        | LC     | C         | Y                 |
| Synallaxis albescens     | Pale-breasted Spinetail       | 1, 2        | LC     | C         | Y                 |
| Leptasthenura platensis  | Tufted Tit-spinetail          | 1, 2        | LC     | C         | Y                 |
| Leptasthenura fuliginiceps | Brown-capped Tit-spinetail   | 2, 4, 5     | LC     | U         | Y                 |
| Pseudoseisura lophotes   | Brown Cacholote               | 1, 2, 3, 6, 7 | LC     | C         | Y                 |
| Lepidocolaptes angustirostris | Narrow-billed Woodcreeper   | 1, 2        | LC     | C         | Y                 |
| Drymornis bridgesii      | Scimitar-billed Woodcreeper   | 1, 2, 3, 7   | LC     | C         | Y                 |
| Thamnophilidae           |                               |             |        |           |                   |
| Thamnophilus caerulescens | Variable Antshrike            | 1, 2        | LC     | C         | Y                 |
| Taraba major             | Great Antshrike               | 1, 2        | LC     | R         | Y                 |
| Rhinocryptidae           |                               |             |        |           |                   |
| Rhinocrypta lanceolata   | Crested Gallito               | 1, 2        | LC     | U         | Y                 |
| Melanopareidae           |                               |             |        |           |                   |
| Melanopareia maximiliani | Olive-crowned Crescentchest   | 3, 4, 5     | LC     | C         | Y                 |
| Tyrannidae               |                               |             |        |           |                   |
| Campostoma obsoletum     | Southern Beardless-tyrantulent | 1, 2, 7     | LC     | C         | Y                 |
| Myiophobus fasciatus     | Bran-colored Flycatcher       | 1, 2        | LC     | C         | S                 |
| Hemitriccus margaritaeaventer | Pearly-vented Tody-tyrant    | 1, 2        | LC     | C         | Y                 |
| Elaenia albiceps         | White-crested Elaenia         | 1, 2        | LC     | U         | S                 |
| Elaenia parvirostris     | Small-billed Elaenia          | 1, 2        | LC     | C         | S                 |
| Sublegatus modestus      | Southern Scrub-flycatcher     | 1, 2        | LC     | U         | Y                 |
| Suiriri suiriri          | Suiriri Flycatcher            | 1, 2        | LC     | C         | Y                 |
| Lessonia rufa            | Rufous-backed Negrito         | 8, 9        | LC     | U         | W                 |
| Serpophaga nigricans     | Sooty Tyrannulet              | 9, 10       | LC     | U         | Y                 |
| Serpophaga subcristata   | White-crested Tyrannulet      | 1, 2        | LC     | C         | Y                 |
| Serpophaga mundia        | White-bellied Tyrannulet      | 1, 2        | LC     | C         | Y                 |
| Pyrocephalus rubinus     | Vermilion Flycatcher          | 1, 6        | LC     | C         | S                 |
| Eucarthus melophus       | Tawny-crowned Pygmy-tyrant    | 1, 2        | LC     | C         | Y                 |
| Anairetes flavirostris   | Yellow-billed Tit-tyrant      | 2           | LC     | C         | Y                 |
| Anairetes parulus        | Tufted Tit-tyrant             | 2, 5        | LC     | U         | A                 |
| Sigmatura budytoides     | Greater Wagtail-tyrant        | 1, 2        | LC     | C         | Y                 |
| Myiodynastes maculatus   | Streaked Flycatcher           | 2           | LC     | C         | S                 |
| Pitangus sulphuratus     | Great Kiskadee                | 1, 6, 7     | LC     | C         | Y                 |
| Tyrannus melancholicus   | Tropical Kingbird             | 1, 2, 6, 7   | LC     | C         | S                 |
| Machetornis rixosa       | Cattle Tyrant                 | 1, 6, 7     | LC     | C         | Y                 |
| Myiarchus tyrannulus     | Brown-crested Flycatcher      | 1, 2        | LC     | R         | S                 |
| Myiarchus swainsoni      | Swainson’s Flycatcher         | LC          | C      | S         |                   |
| Hirundinea ferruginea    | Cliff Flycatcher              | 2, 3, 7     | LC     | C         | Y                 |
| Knipolegus aterrinus     | White-winged Black-tyrant     | 1           | LC     | U         | S                 |
| Knipolegus striaticeps   | Cinereous Tyrant              | 1           | LC     | U         | S                 |
| Taxon                        | English Name                  | Environment | Status | Abundance | Seasonal Presence |
|-----------------------------|-------------------------------|-------------|--------|-----------|-------------------|
| Hymenops perspicillatus     | Spectacled Tyrant             | 1, 3, 4     | LC     | C         | Y                 |
| Empidonum aurantioatrocrisatus | Crowned Slaty-flycatcher       | 1, 2, 7     | LC     | C         | S                 |
| Tyrannus savana             | Fork-tailed Flycatcher         | 1, 7        | LC     | C         | S                 |
| Xolmis coronatus            | Black-crowned Monjita         | 1           | LC     | U         | W                 |
| Xolmis irupero              | White Monjita                 | 1, 6        | LC     | C         | Y                 |
| Agriornis micropterus       | Gray-bellied Shrike-tyrant    | 1, 2, 3, 6  | U      | C         | Y                 |
| Agriornis murinus           | Lesser Shrike-tyrant          | 1, 6        | U      | W         | S                 |
| Agriornis montanus          | Black-billed Shrike-tyrant    | 3, 4, 5     | LC     | C         | Y                 |
| Muscisaxicola rufivertex    | Rufous-naped Ground-tyrant    | 3, 4        | LC     | C         | Y                 |
| Muscisaxicola maclovianus   | Dark-faced Ground-tyrant      | 6           | LC     | Y         | C                 |
| Tyriridae                   |                               |             |        |           |                   |
| Pachyramphus validus        | Crested Becard                | 2           | LC     | U         | S                 |
| Pachyramphus polychopterus  | White-winged Becard           | 2           | LC     | U         | S                 |
| Cotingidae                  |                               |             |        |           |                   |
| Phytotoma rutila            | White-tipped Plantcutter      | 1, 3, 6     | LC     | C         | Y                 |
| Vireonidae                  |                               |             |        |           |                   |
| Vireo olivaceus             | Red-eye Vireo                 | 1, 2        | LC     | C         | S                 |
| Cyclarhis gujanensis        | Rufous-browed Peppershrike    | 1, 2        | LC     | C         | Y                 |
| Hirundinidae                |                               |             |        |           |                   |
| Progne elegans              | Southern Martin               | 2, 3, 6     | LC     | C         | S                 |
| Progne tapera               | Brown-chested Martin          | 2, 3        | LC     | C         | S                 |
| Tachycineta leucorrhoea     | White-rumped Swallow          | 1, 2, 7     | LC     | C         | S                 |
| Tachycineta leucopyga       | Chilean Swallow               | 1           | LC     | C         | W                 |
| Pygchelidon cyanoleuca      | Blue-and-White Swallow        | 1, 2        | LC     | C         | Y                 |
| Trogodytidae                |                               |             |        |           |                   |
| Troglothytes aedon          | House Wren                    | 1, 2, 3, 4, 6, 7 | LC | C | Y |
| Cistothorus platensis       | Grass Wren                    | 3, 4, 5     | LC     | C         | Y                 |
| Polioptilidae               |                               |             |        |           |                   |
| Poliopila dumicola          | Masked Gnatcatcher            | 1, 2, 3     | LC     | C         | Y                 |
| Turdidae                    |                               |             |        |           |                   |
| Catharus ustulatus          | Swainson’s Thrush             | 1, 2        | LC     | R         | S                 |
| Turdus amaurochalinus       | Creamy-bellied Thrush         | 1, 2, 6, 7  | LC     | C         | Y                 |
| Turdus rufiventris          | Rufous-bellied Thrush         | 1, 2, 3, 5, 6, 7 | LC | C | Y |
| Turdus nigriceps            | Slaty Thrush                  | 2           | LC     | U         | Y                 |
| Turdus chiguango            | Chiguango Thrush              | 1, 2, 3, 4, 5, 6, 7 | LC | C | Y |
| Mimidae                     |                               |             |        |           |                   |
| Mimus triurus               | White-banded Mockingbird      | 1, 6        | LC     | C         | W                 |
| Mimus patagonicus           | Patagonian Mockingbird        | 1           | LC     | U         | W                 |
| Mimus saturninus            | Chalk-browed Mockingbird      | 1, 2, 3, 6, 7 | LC | C | Y |
| Motacillidae                |                               |             |        |           |                   |
| Taxon                      | English Name               | Environment | Status | Abundance | Seasonal Presence |
|---------------------------|----------------------------|-------------|--------|-----------|-------------------|
| *Anthus furcatus*         | Short-billed Pipit         | 3, 5        | LC     | U         | Y                 |
| *Anthus lutescens*        | Yellowwist pipit           | 3           | LC     | U         | Y                 |
| *Anthus hellmayri*        | Hellmayr’s Pipit           | 3           | LC     | C         | Y                 |
| **Parulidae**             |                            |             |        |           |                   |
| *Parula pitiayumi*        | Tropical Parula            | 1           | LC     | U         | Y                 |
| *Geothlypis aequinocius*  | Masked Yellowthroat        | 1, 2        | LC     | C         | Y                 |
| *Myioborus brunniceps*    | Brown-capped Redstart      | 3, 4, 5     | LC     | C         | A                 |
| **Thraupidae**            |                            |             |        |           |                   |
| *Pipaedia bonariensis*    | Blue-and-yellow Tanager    | 1, 2, 3, 7  | LC     | C         | Y                 |
| *Thraupis sayaca*         | Sayaca Tanager             | 1           | LC     | C         | Y                 |
| *Phrygilus alaudinus*     | Band-tailed Sierra-finch   | 3, 4        | LC     | C         | Y                 |
| *Phrygilus unicolor*      | Plumbeous Sierra-finch     | 3, 4, 5     | LC     | C         | Y                 |
| *Phrygilus carbonarius*   | Carbonated Sierra-finch    | 1, 2        | LC     | R         | W                 |
| *Phrygilus plebejus*      | Ash-breasted Sierra-finch  | 3, 4, 5     | LC     | C         | Y                 |
| *Sicalis flaveola*        | Saffron Yellow-finch       | 1, 6, 7     | LC     | C         | Y                 |
| *Sicalis luteola*         | Grassland Yellow-finch     | 1, 6        | LC     | C         | Y                 |
| *Saltraticula multicolor* | Many-colored Chaco-finch   | 1           | LC     | C         | Y                 |
| *Poospiza ornata*         | Cinnamon Warbling-finch    | 1           | VU     | C         | W                 |
| *Poospiza hypochondria*   | Rufous-sided Warbling-finch| 3, 5        | LC     | U         | Y                 |
| *Poospiza nigrofus*       | Black-and-rufous Warbling-finch | 1, 2 | LC | C | Y |
| *Poospiza torquata*       | Ringed Warbling-finch      | 1           | LC     | C         | Y                 |
| *Poospiza melanoleuca*    | Black-capped Warbling-finch| 1, 2        | LC     | C         | Y                 |
| *Lophospingus pusillus*   | Black-crested Finch        | 1           | LC     | U         | Y                 |
| *Gubernatrix cristata*    | Yellow Cardinal            | 1, 2        | EN     | R         |                   |
| *Parnaia coronata*        | Red-crested Cardinal       | 1           | LC     | U         | Y                 |
| *Coryphospingus cuculatus*| Red-crested Finch          | 1           | LC     | U         | Y                 |
| *Sporophila caerulescens* | Double-collared Seedeater  | 1, 2        | LC     | C         | S                 |
| *Catamenia analis*        | Band-tailed Seedeater      | 2, 3, 4     | LC     | C         | Y                 |
| *Catamenia inornata*      | Plain-colored Seedeater    | 3, 4, 5     | LC     | C         | Y                 |
| *Diuca diuca*             | Common Diuca-finch         | 1           | LC     | C         | S                 |
| *Embernagra platensis*    | Great Pampa-finch          | 1, 3        | LC     | C         | Y                 |
| *Salator aurantirostris*  | Golden-billed Saltator     | 1, 2, 3, 6, 7| LC | C | Y |
| **Emberizidae**           |                            |             |        |           |                   |
| *Zonotrichia capensis*    | Rufous-collared Sparrow    | 1, 2, 3, 4, 5, 6, 7 | LC | C | Y |
| *Rhyhchospora strigiceps* | Stripe-capped Sparrow      | 1           | LC     | C         | Y                 |
| *Ammomus musculus*        | Grassland Sparrow          | 1, 3        | LC     | C         | Y                 |
| **Cardinalidae**          |                            |             |        |           |                   |
| *Pheucticus aureoventris* | Black-backed Grosbeak      | 2, 3, 5     | LC     | U         | S                 |
| *Piranga flava*           | Hepatic Tanager            | 1, 2        | LC     | C         | Y                 |
| *Cyanocompsa brunsonii*   | Ultramarine Grosbeak       | 1, 2        | LC     | U         | Y                 |
### APPENDIX II

Bird species predicted to occur at our study area and including probable habitat (see references in Appendix I). It includes species known from nearby areas, based on Nores (1996) and unpublished data.

| Species                        | English name                                      | Environment |  |
|--------------------------------|---------------------------------------------------|-------------|---|
| *Annas cyanoptera*            | Cinnamon Teal                                     |             | 10|
| *Buteo swainsoni*             | Swainson’s Hawk                                   |             | 1, 6|
| *Pandion haliaetus*           | Osprey                                            |             | 10|
| *Cariama cristata*            | Red-legged Seriema                                |             | 1|
| *Nyctibius griseus*           | Common Potoo                                      |             | 1|
| *Chordeiles minor*            | Common Nighthawk                                  |             | 1|
| *Chaetura meridionalis*       | Sick’s Swift                                      |             | 1|
| *Upucerthia validirostris*    | Buff-breasted Earthcreeper                        |             | 4|
| *Leptasthenura aegithaloides* | Tufted Tit-Spinetail                              |             | 1|
| *Phacellodomus sibilatrix*    | Little Thornbird                                  |             | 1|
| *Lathrotricus euleri*         | Euler’s Flycatcher                                |             | 1|
| *Pseudocolopteryx acutipennis*| Subtropical Doradito                              |             | 3, 4|
| *Pseudocolopteryx flaviventris*| Warbling Doradito                                |             | 9, 10|
| *Tachuris rubrigastra*        | Many-colored Rush-tyrant                          |             | 9, 10|
| *Knipolegus hudsoni*          | Hudson’s Black-tyrant                             |             | 1, 6|
| *Muscisaxicola capistratus*   | Cinnamon-bellied Ground-tyrant                    |             | 4, 6|
| *Phrygilus gayi*              | Gray-hooded Sierra-Finch                          |             | 1, 3, 4|