An avifaunal survey of the vanishing interior Atlantic forest of San Rafael National Park, Departments Itapúa/Caazapá, Paraguay

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El Bosque Atlántico del sudeste de Brasil, este de Paraguay y noreste de Argentina se ha considerado como una de las regiones más amenazadas del Neotrópico, con un elevado número de aves endémicas y con problemas de conservación a nivel global. En Paraguay resta menos del 13% de la superficie boscosa original de este tipo de ambiente; la última oportunidad para proteger una masa forestal de tamaño considerable, depende de los pasos que se den en el futuro inmediato para consolidar de forma efectiva el polémico Parque Nacional San Rafael (65,000 ha), un parque "sobre el papel" cuya tenencia de tierra permanece en manos privadas. Esta situación ha provocado una alarmante deforestación , con una pérdida de aproximadamente un 17% de las 78,000 ha que inicialmente se habían decretado como área de reserva para parque en 1992.

Se presentan los resultados de un estudio ornitológico llevado a cabo durante la primera quincena de Noviembre de 1996 en el extremo noreste del parque (2,000 ha de bosque en muy buen estado de conservación). Nuestros resultados, en combinación con el trabajo anterior de Lowen *et al.*[19], proporcionan evidencia de que San Rafael debiera considerarse como la principal prioridad de conservación nacional por ser el lugar más importante desde el punto de vista de la conservación de las aves del Bosque Atlántico y no gozar de la protección necesaria. Hasta la fecha, se conocen en San Rafael 294 especies de aves de las cuales 16 tienen problemas de conservación a nivel global (14 de las mismas son endémicas del Bosque Atlántico). Se estima que en San Rafael se dan cita la mayoría de los 76 endemismos del Bosque Atlántico registrados hasta la fecha en Paraguay.

La consolidación definitiva del Parque Nacional San Rafael requiere de urgentes medidas de conservación por parte de los organismos gubernamentales y ONGs conservacionistas. El reto más importante en la actualidad, radica en diseñar una estrategía de conservación para que San Rafael se pueda considerar un área protegida con una categoría de manejo que satisfaga la situación particular del parque. Se ha propuesto la compra de tierras (por parte del gobierno, o en su defecto, por la Fundación Cordillera de San Rafael) de una zona núcleo de unas 15,000–20,000 ha. Rodeando a esta se podría lograr un área de usos manejados, donde los propietarios (incluyendo asentamientos indígenas) puedan entrar en un régimen especial de uso sustentable que garantice el bienestar de los recursos naturales del parque a largo plazo. Se deben tomar medidas urgentes para detener la deforestación y extracción ilegal de madera. Finalmente, la protección del parque requerirá de una infraestructura mínima y de programas de apoyo a las comunidades vecinas (indígenas, campesinos y propietarios afectados).

Introduction

The Atlantic forest of south-east Brazil, east Paraguay, and north-east Argentina has been identified as one of the most endangered habitats in the Neotropics[6,27], and is one of the most threatened habitats of the world[14]. Almost a decade ago Wilson[28] estimated that 94% of this forest had been destroyed and that 5% what remained was already degraded. Given the amount of deforestation in the region since those grim estimates, the forest area remaining now will be even lower.

The subtropical forests of east Paraguay are the westward extension of the coastal Atlantic forest of south-east Brazil and are generally referred to as the Brazilian Interior Atlantic forest[6], Southern Atlantic forest[27], Paraná forest[16] or Interior Atlantic forest[11,22]. These forests form part of one of the richest regions of avian endemism in the Neotropics[14,27]: 76 of the 199 species considered endemic to the Atlantic forest region[27] have been recorded in Paraguay[2,3,12,18,19]. A total of 13 threatened and 20 near-threatened forest-dependent species, of which 10 and 16 respectively are endemic to the Atlantic forest, have been recorded in the country[5,19]. Stotz *et al.*[27] subdivided the Atlantic forest into four subregions, of which the

Major road through San Rafael National Park (Alberto Madroño N.)

Road through recently cleared and cultivated areas in San Rafael National Park (Alberto Madroño N.)

"Southern Atlantic forest" contains more endemic bird species (101) than any other region (divided or otherwise) in the Neotropics. Forty six of these 101 endemics have been documented in Paraguay[2,12,18,19], of which seven are classified as threatened and nine as near-threatened[5].

Only 13% of the Paraguayan Atlantic forest remained in 1994, most of the deforestation having occurred within the last two decades[1,7]. On paper, the largest block of Atlantic forest remaining in Paraguay is San Rafael National Park in the Cordillera de San Rafael on the border of Departments (Depts.) Itapúa and Caazapá, south-east Paraguay. In 1992, 78,000 ha were reserved for the national park[8,9], but most of the park was heavily modified during the ensuing four years, with some sections converted to agriculture[19] (judged from March–April 1994 aerial photographs, pers. obs.). Delimitation of San Rafael was completed in March 1997 with an estimated 65,000 ha as the final size of the park. All of the land, however, remains in private ownership[8,19]. In this paper we present results of an avifaunal survey in the last remaining block of pristine forest in San Rafael and discuss the conservation efforts required to ensure that this immensely valuable site is not further degraded or destroyed.

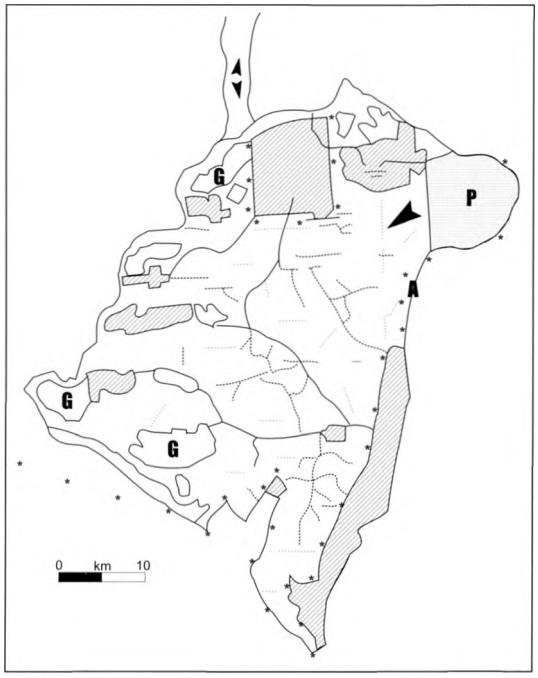
Study area and methods

San Rafael National Park lies in the Cordillera de San Rafael in the upper Río Tebicuary drainage, immediately south of the Cordillera de Caaguazú. The majority of the park lies within the Río Paraguay watershed, although the east side of the park either has or adjoins streams that flow into the Río Paraná watershed. The relief of the park is most pronounced in the east, where there are a series of steep-sided valleys, with maximum elevations of 400–500 m. These valleys are predominantly aligned east–west, and other small rivers follow this same orientation through relatively hilly and undulating lowlands (mostly 150–300 m) until they reach the Río Tebicuary. Soils vary from relatively sandy in the west to more fertile clays in the east. Bedrock of volcanic origin is exposed in areas of more pronounced relief. San Rafael lies between the Alto Paraná and Selva Central ecoregions as defined by CDC[4] and on the border between the Alto Paraná and Central Paraguay geographic regions of Hayes[12].

Our study site comprised 2,000 ha of forest centred on 26°20'S 55°32'W within the "Parabel" part of Estancia Parex (see map), an area of steep-sided forested valleys. Base camp was at the estancia's headquarters on the forest edge at 26°21'S 55°31'W. The flora of this same block was studied by Keel *et al.*[15]. They found the five most common species at Parabel (in a 0.1 ha plot) to be: *Actinostemon concolor*, *Holocalyx balansae*, *Sorocea bonplandii*, *Patagonula americana* and *Pilocarpus pennatifolius*. Myrtaceae are noticeably scarce at Parabel compared to the Mbaracayú Natural Forest Reserve, Dept. Canindeyú[15], the only extensive tract of effectively protected Interior Atlantic forest in Paraguay. Forest height on more level areas at Parabel is typically medium to tall, with a notably high density of *Jacaranda* sp. and *Ficus* sp. compared to other sites in Paraguay. Both favour red clay soils[17] and are very rare (especially the former) at Mbaracayú. Other large trees in the study area included: *Enterolobium* sp., *Peltophorum dubium*, *Parapiptadenia* sp., *Balfourodendron riedelianum*, *Tabebuia* sp. and *Cedrela* sp. Common trees in the midstorey included *Syagrus romanzoffiana*, *Myrocarpus frondosus* and *Lonchocarpus* sp. The understorey varied from open to patches of thick bamboo

(*Chusquea* sp.). Small shrubs, such as *Sorocea bonplandii*, were common and fruiting during our survey. A more complete vegetation description of Parabel can be found in Keel *et al.*[15].

Fieldwork was conducted from 3–16 November 1996 (with one additional half-day on 8 December 1996 by AMN and RPC). A total of c.250 diurnal field-hours and c.9,500 diurnal metre net-hours were accrued. Tape recordings were made of 92 species: these will be deposited with the Library of Natural Sounds, Cornell, USA. Seasonality and annual rainfall in San Rafael are similar to Caaguazú National Park, Dept. Caazapá[13]. October 1996 was unusually wet in eastern Paraguay, but the weather during November 1996 was more typical.



Map of San Rafael National Park depicting approximate boundaries of the proposed park at the time of its creation in 1992 (c.78,000 ha). Information concerning deforested areas is principally derived from 1994 aerial photographs; subsequent clearing may have occurred.

* * * = proposed new boundaries attempt to avoid recently deforested areas (e.g. in the south-east); P = pristine forest at Estancia "Parabel" (our study site); dark areas = clearings and highly damaged habitat; G= temporarily flooded grasslands where recent surveys have found Cock-tailed Tyrant *Alectrurus tricolor* and Stange-tailed Tyrant *A. risora*; solid lines = major dirt roads within the forest; dashed lines and small dots = all the remaining selectively logged forests of the park; the large arrow = selectively logged forest where indigenous "Mbyá" have legal habitation rights (this area is critical to the park's long-term viability); small arrows = the forested corridor of the Arroyo Tayay should help avoid isolation from Caaguazú National Park; A = Arroyo Claro settlement.

Results

A total of 211 bird species were recorded at Parabel, including two threatened and eight near-threatened species (see Appendix 1). Our results, combined with findings by Lowen *et al.*[19], document a total of 294 species for the park as a whole. These include five threatened and a minimum of 15 near-threatened species: four of the former and 11 of the latter are endemic to the Atlantic forest region (Appendix 1). One threatened species – Russet-winged Spadebill *Platyrinchus leucoryphus* – and two near-threatened species – Solitary Tinamou *Tinamus solitarius* and Saffron Toucanet *Baillonius bailloni* – had not been recorded in the park prior to our fieldwork at Parabel, although all had been predicted to occur[19]. Blue-winged Macaw *Ara maracana* is also probably present: two groups of four birds were recorded flying along the 'biological corridor' formed by the Arroyo Tayay, between Caaguazú and San Rafael National Parks, in December 1996 (E. Z. Esquivel verbally 1997; see map).

A sizeable population of *Platyrinchus leucoryphus* was an important discovery. At least seven birds were recorded along c.1.5 km of forest trail, with an eighth c.1.5 km distant. A minimum of three individuals were caught (one male and two females) with both females showing signs of brood patches. A nest was also found under construction, with two eggs laid by the end of our fieldwork. In contrast to fieldwork at Caaguazú National Park in 1995[23], *P. leucoryphus* was heard singing on very few occasions. It seems likely that the Parabel population is considerably higher than we recorded. This difference in vocal activity between November 1995 and 1996 may be related to the different weather conditions during the two periods (see[23] and Study area and methods).

Of the 76 Atlantic forest endemics known from Paraguay, 62 (82%) have been recorded at San Rafael (Appendix 1), and we predict that additional fieldwork will reveal virtually all 76 endemics to be present. Parker *et al.*[25] provide a list of "indicator species" for each region, and habitat type within that region, in the Neotropics. The presence of a near-complete suite of the expected indicator species at a site signifies that the site is a high-quality example of a particular habitat type. Of the 78 indicator species documented for Atlantic forest in

Paraguay, 57 (79%) have already been recorded at San Rafael, indicating its high-quality forest (particularly at Parabel). This figure will also undoubtedly increase with additional fieldwork.

The 1995 fieldwork at San Rafael produced records of several species known from Paraguay on very few occasions, such as Rusty-barred Owl *Strix hylophila*, Black-billed Scythebill *Campylorhamphus falcularius*, Bertoni's Antbird *Drymophila rubricollis*, Large-tailed Antshrike *Mackenziaena leachii*, Speckle-breasted Antpitta *Hylopezus nattereri*, Green-chinned Euphonia *Euphonia chalybea* and Diademed Tanager *Stephanophorus diadematus*[19,21]. We recorded two of these species at Parabel. *Mackenziaena leachii* was found regularly in forest-edge scrub – these and records in 1995 are the first in Paraguay since 1936[18]. In contrast to 1995 fieldwork, there was only one record of *Hylopezus nattereri*, in a bamboo (*Chusquea* sp.) stand along a river at a lower elevation than most of the study site. The 1995 and 1996 records of this species are the first in Paraguay since c.1903[18]. In addition, a tape-recorded *Pulsatrix* sp. is likely, based on range, to be Tawny-browed Owl *P. koeniswaldiana*, a species known from Paraguay from an old lost specimen and a handful of records from two sites[3,12,19].

Several species recorded from San Rafael have very limited distributions in Paraguay, being known only from the extreme south-east/east, and not found, for example, at Mbaracayú[22]. Such species include Lesser Woodcreeper *Lepidocolaptes squamatus*, Black-billed Scythebill, Olive Spinetail *Cranioleuca obsoleta*, White-browed Foliage-gleaner *Anabacerthia amaurotis*, Large-tailed Antshrike, Bertoni's Antbird and Diademed Tanager (of which all but the latter are endemic to the Atlantic forest). In addition, other Atlantic forest endemics e.g. *Platyrinchus leucoryphus* and Chestnut-headed Tanager *Pyrrhocoma ruficeps* are more numerous at San Rafael than at forested sites further north and west (such as at Mbaracayú: AMN).

Of the 63 species collected (two additional species were preserved as fluid specimens: no gonads examined) 31 had enlarged gonads indicating reproduction (Appendix 1). Based on vocal activity, breeding was suspected in a number of other species. Although no specimens were collected, there was a general lack of breeding evident during the July 1995 survey (RPC), as might be expected in the austral winter.

There appeared to be little hunting pressure at Parabel, as substantial populations of frequently hunted species such as *Tinamus solitarius* and Rusty-margined Guan *Penelope superciliaris* were encountered. The remains of two eggs of *T. solitarius* were found in different areas, birds were calling frequently, and on two occasions presumed parent–chick contact calls were tape-recorded. The best indicator of how little hunting occurs at Parabel was the presence of a relatively large (up to three troops/day) and approachable population of Brown Capuchin monkeys *Cebus apella*. Another indication of the high capuchin density at this site is our record of a large eagle (plus one recorded in 1995, but omitted by Lowen *et al.*[26]), which refers to either Harpy Eagle *Harpia harpyja* or Crested Eagle *Morphnus guianensis*. Given the low diversity of arboreal mammals in Paraguay's Atlantic forest (lacking, e.g. squirrels *Sciurus* sp., sloths *Bradypus* sp. and Kinkajou *Potus flavus*[10,26] on which, for example, *Harpia* depends elsewhere in its range) this eagle must rely heavily on monkeys as its primary food source.

Discussion

Our results and those of Lowen *et al.*[19] provide evidence that San Rafael National Park is the most important site in Paraguay for the conservation of Atlantic forest avifauna. San Rafael has the most complete suite of Atlantic forest indicator species (as identified by Stotz *et al.*[27]) of any site in the country. Only one other locality, the smaller and more comprehensively surveyed Caaguazú National Park[19,23] holds more Atlantic forest endemic birds (63 compared to 62 species). In terms of taxa of global conservation concern, only three sites in Paraguay are known to have more threatened and near-threatened species[19]. All three sites (Itabó Private Nature Reserve in Dept. Canindeyú, Mbaracayú and Caaguazú National Park) have been much more thoroughly surveyed than San Rafael[19,20,22,23].

Adding our findings to the evaluation by Lowen *et al.*[19] of sites based not only on the presence/absence of species but additionally using indices of global status and abundance (see[19]), we find San Rafael National Park to be Paraguay's second most important site for the conservation of the Atlantic forest avifauna. Only Itabó Private Nature Reserve appears to be more important, but that site's 3,000 ha of protected forest must contain much smaller and (less viable) populations of endemic and threatened species than the c. 65,000 ha of forest at San Rafael. The size and configuration of San Rafael's remaining forest block means that the park is likely to harbour Paraguay's largest absolute populations of a number of Atlantic forest species. The preservation of San Rafael National Park should be the

highest conservation priority in Paraguay, and because of the overall global threat to this habitat, its preservation should become an international priority.

Current conservation initiatives and threats to San Rafael National Park

The future of San Rafael is a subject of great controversy in Paraguay. From November 1996 to March 1997, the national press published several articles on the fate of the park, discussing issues such as illegal logging within its boundaries and incursions into the indigenous Mbyá lands by Paraguayan and immigrant Brazilian campesinos (farmers). The park delimitation – now complete – shows that deforestation has reduced the park's protected surface area from 78,000 ha to c.65,000 ha (see map). The revised boundaries (c.70% of the new perimeter was delineated by early December 1996) will require the final approval of the government.

The consolidation and effective protection of San Rafael National Park largely depends on the success of a five-year project financed by the World Bank and managed by the "Dirección Nacional de Coordinación y Administración de Proyectos" (DINCAP) within the "Ministerio de Agricultura y Ganadería" (MAG). This project is attempting to improve social and environmental conditions in Dept. Alto Paraná and northern Dept. Itapúa, with that part relating to the park managed by the "Centro Regional Ambiental del Este" (CRAE). However, the World Bank credit does not allow for direct land acquisition. This fundamental obstacle was the central theme of a two-day workshop organised by DINCAP/CRAE in December 1996 with representatives from regional governments, landowners and two conservation NGOs, Fundación Cordillera San Rafael and Fundación Moisés Bertoni (FMB).

Aerial photos taken during March and April 1994 demonstrate that most of the forest within the San Rafael block had already been selectively logged (see map). At the southern end, where Lowen *et al.*[19] worked in July 1995, the forest had been selectively logged for some time, with additional recent removal within a few weeks of their fieldwork. Even within the relatively intact block of forest at Parabel, some illicit logging had occurred. For example, c.20 *Tabebuia* sp. trees of high commercial value were cut before the owners discovered and stopped removal of the timber. That pristine forest remains in Parabel is testimony to the landowners' willingness to protect the forest. During our fieldwork, chainsaws were heard daily from adjacent areas theoretically protected within the national park. Even the steep undulating topography provides little protection for the remaining forest, with tracks opened up and trees removed using tractors.

The single largest threat to the park is the conversion by landowners of forest to agricultural uses in an attempt to avoid expropriation of their land to form the national park. The clearing of land by owners is also a common practice to preclude campesinos from settling on their property. This practice is now occurring at an increasingly rapid rate within the supposed park boundaries (various landowners and local people verbally 1996). An added incentive to cut the forest is that the park boundaries are only delimited on forested land: by clear-cutting, landowners can claim ignorance of the boundaries. For instance, at Estancia Toro Blanco (a large square-shaped clearing to the north: see map), heavy machinery has already been hired for 4,000 hours of land clearance. Further intentions to deforest within the park boundaries were obvious from the 1994 photographs, with a minimum of three 4-km long rectangular openings cut.

The forest is still used by local people (Guaraní Indians and Paraguayan campesinos), and there are two areas legally set aside for indigenous communities within the park. We found several small paths used by indigenous Guaraní for subsistence hunting and gathering, but such relatively small-scale utilisation is unlikely to be a serious threat to the integrity of the area. Because the remaining forest is surrounded by agricultural land there is a large impact on water quality in the drainage basin. Many of the streams in the upper reaches of the watersheds are in farmland, and heavy rains cause severe erosion (pers. obs.). The abundant use of fertilisers and pesticides on the surrounding cropland undoubtedly has an insidious effect on the forest ecosystem.

Recommendations

It will take the coordination of all governmental authorities involved and close cooperation with conservation NGOs to ensure that San Rafael National Park does not suffer further deterioration. In line with the results of the above-mentioned workshop, we highly recommend adoption of the following measures to guarantee the integrity of the remaining habitat:

- The immediate acquisition of a core area of 15,000–20,000 ha, ideally by the Paraguayan government (funds for a small land purchase

are apparently now available: W. Sosa verbally 1997). If immediate governmental action is not feasible, then a private initiative should take the lead.

- A surrounding protected area of 45,000–50,000 ha should be added around the core purchased area (but within the existing park boundaries), with landowners entering a private nature reserve scheme, whereby they are allowed to make sustainable use of certain areas of their forested land.
- Delimitation of the park is now complete and the current wooden marker posts should be replaced with more permanent markers such as concrete posts. The cadastro, a map delimiting boundaries of private properties, should be procured as a prerequsite to identifying important landowners.
- Indigenous lands within the park should be clearly demarcated to deter further land invasions by Paraguayan campesinos. These lands are of vital importance in maintaining the biological integrity of the park, especially since the indigenous area in the north forms a forest corridor between the core area and the pristine forest at Parabel (see map).
- Use of the land by the indigenous people should be included within the park management plan, being defined and discussed in close cooperation with them.
- A corps of park guards consisting of local people knowledgeable about the forest should be employed as soon as possible to ensure the effective protection of the newly demarcated area.
- An environmental education programme should be initiated in the settlements neighbouring the park such as Arroyo Claro.
- The regional governments (Depts. Itapúa and Caazapá) should be actively involved in reinforcement of the laws pertaining to the park.
- Categorisation of San Rafael needs to be carefully considered; current plans for sustainable use of resources outside of a central core area do not meet the criteria for national park status.

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Appendix. Birds recorded from San Rafael National Park

Information is presented on the 294 species known from San Rafael National Park.

In parentheses following the species name: e = endemic to the Atlantic forest region[25]; t = globally threatened; nt = near-threatened[5].

B: breeding data, where gathered in November. b = signs of breeding (enlarged gonads, brood patch or cloacal protruberance); n = nest or adults carrying nesting material; j = fledgling or juvenile seen.

Species	B
Tinamus solitarius (nt)	
Crypturellus obsoletus	
Crypturellus parvirostris	
Crypturellus tataupa	
Rhynchotus rufescens	
Nothura maculosa	b
Syrigma sibilatrix	
Tigrisoma lineatum	
Tachybaptus dominicus	
Podylimbus podiceps	
Phalacrocorax brasilianus	
Bubulcus ibis	
Butorides striatus	
Coragyps atratus	
Cathartes aura	
Cathartes burrovianus	
Sarcoramphus papa	
Chauna torquata	
Amazonneta brasiliensis	
Elanoides forficatus	
Elanus leucurus	
Rostrhamus sociabilis	
Harpagus diodon	
Ictinia plumbea	
Accipiter erythronemius	
Accipiter bicolor	
Buteogallus urubitinga	
Buteo magnirostris	
Heterospizas meridionalis	
Harpia harpyja? (nt)	
Morphnus guianensis?(nt)	
Spizastur melanoleucus (nt)	
Spizaetus ornatus	
Caracara (Polyborus) plancus	
Milvago chimango	
Milvago chimachima	
Micrastur ruficollis	
Micrastur semitorquatus	
Falco sparverius	
Penelope superciliaris	
Pipile jacutinga (e, t)	
Crax fasciolata	
Odontophorus capueira (e)	
Laterallus sp.	
Aramides cajanea	
Aramides saracura (e)	
Porzana albicollis	
Pardirallus nigricans	
Pardirallus sanguinolentus	
Gallinula chloropus	
Himantopus melanurus	
Vanellus chilensis	b
Pluvialis dominica	
Jacana jacana	
Gallinago paraguaiae	
Gallinago undulata	
Columba picazuro	
Columba cayennensis	
Zenaida auriculata	
Columbina talpacoti	
Columbina picui	
Claravis pretiosa	
Leptotila verreauxi	
Leptotila rufaxilla	
Geotrygon montana	j
Geotrygon violacea	b
Aratinga leucophthalmus	
Myiopsitta monachus	
Pyrrhura frontalis (e)	
Brotogeris chiriri	
Pionopsitta pileata (e, nt)	
Pionus maximiliani	
Coccyzus melacoryphus	
Piaya cayana	
Tapera naevia	
Dromococcyx pavoninus	
Crotophaga ani	
Guira guira	
Otus choliba	
Otus atricapillus (e)	
Pulsatrix sp.	
Glaucidium brasilianum	
Speotyto cunicularia	
Strix hylophila (e)	
Ciccaba virgata	
Lurocalis semitorquatus	b
Podager nacunda	
Nyctidromus albicollis	
Caprimulgus sericocaudatus	
Nyctibius griseus	
Nyctibius aethereus	
Chaetura andrei	
Chaetura cinereiventris	
Phaethornis eurynome (e)	
Leucochloris albicollis	
Stephanoxis lalandi (e)	
Chlorostilbon aureoventris	
Hylocharis chrysura	
Amazilia versicolor	
Trogon rufus	j
Trogon surrucura (e)	b
Baryphthengus ruficapillus (e)	b
Ceryle torquata	

Chloroceryle amazona
Chloroceryle americana
Chloroceryle inda
Nystalus chacuru
Nonnula rubecula
Pteroglossus castanotis
Selenidera maculirostris
Baillonius bailloni (e, nt) b
Ramphastos dicolorus (e) b
Ramphastos toco
Picumnus temminckii (e)
Melanerpes candidus
Melanerpes flavifrons (e)
Veniliornis spilogaster (e)
Piculus aurulentus (e, nt)
Colaptes melanochloros
Colaptes campestris
Celeus flavescens
Dryocopus galeatus (e, t)
Dryocopus lineatus
Campephilus robustus (e)
Furnarius rufus j
Synallaxis ruficapilla (e) j
Synallaxis spixi
Synallaxis cinerascens j
Certhiaxis cinnerascens
Cranioleuca obsoleta (e)
Syndactyla rufosuperciliata b
Anabacerthia amaurotis (e, nt)
Philydor atricapillus (e)
Philydor lichtensteini (e)
Philydor rufus
Automolus leucophthalmus (e) b
Heliobletus contaminatus (e)
Xenops rutilans
Xenops minutus j
Sclerurus scansor (e) j
Lochmias nematura
Dendrocincla turdina (e) b
Sittasomus griseicapillus b
Xiphocolaptes albicollis
Dendrocolaptes platyrostris b
Lepidocolaptes squamatus (e)
Lepidocolaptes fuscus (e) j
Campylorhamphus falcularius (e)
Hypoedaleus guttatus (e)
Mackenziaena leachii (e)
Mackenziaena severa (e)
Thamnophilus doliatus
Thamnophilus caerulescens j
Dysithamnus mentalis j
Herpsilochmus rufimarginatus
Drymophila rubricollis (e)
Drymophila malura (e) j
Terenura maculata (e)
Pyriglena leucoptera (e) b
Chamaeza campanisona b
Grallaria varia
Hylopezus nattereri (e)
Conopophaga lineata (e) j
Phyllomyias burmeisteri
Phyllomyias virescens (e)
Camptostoma obsoletum
Capsiempis flaveola
Myiopagis caniceps
Myiopagis viridicata
Elaenia flavogaster
Elaenia spectabilis
Elaenia albiceps
Elaenia parvirostris
Elaenia mesoleuca
Serpophaga subcristata
Polystictus pectoralis (nt)
Euscarthmus meloryphus
Mionectes rufiventris (e) b
Leptopogon amaurocephalus j
Phylloscartes eximius (e, nt)
Phylloscartes ventralis
Phylloscartes paulistus (e, t)
Phylloscartes sylviolus (e, nt)
Corythopis delalandi n
Myiornis auricularis (e)
Hemitriccus diops (e)
Hemitriccus margaritaceiventer
Todirostrum plumbeiceps j
Tolmomyias sulphurescens
Platyrinchus mystaceus
Platyrinchus leucoryphus (e, t) n
Myiophobus fasciatus
Contopus cinereus
Lathrotriccus euleri
Cnemotriccus fuscatus
Pyrocephalus rubinus
Colonia colonus
Alectrurus tricolor (nt)
Alectrurus risoria (t)
Satrapa icterophrys
Gubernetes yetapa
Machetornis rixosus
Casiornis rufa
Sirystes sibilator b
Myiarchus swainsoni
Myiarchus ferox
Myiarchus tyrannulus
Pitangus sulphuratus
Megarynchus pitangua
Myiozetetes similis
Conopias trivirgata b
Myiodynastes maculatus
Legatus leucophaius
Tyrannus melancholicus
Tyrannus savana
Pachyramphus viridis
Pachyramphus castaneus
Schiffornis virescens (e) b
Tityra cayana
Tityra inquisitor
Pyroderus scutatus
Procnias nudicollis (e, nt)
Chiroxiphia caudata (e) b
Piprites chloris
Pipra fasciicauda
Oxyruncus cristatus
Progne chalybea
Phaeoprogne tapera
Tachycineta leucorrhoa
Notiochelidon cyanoleuca
Stelgidopterix ruficollis
Hirundo pyrrhonota
Hirundo rustica
Cyanocorax chrysops
Cyanocorax cyanomelas
Cistothorus platensis
Troglodytes aedon
Polioptila lactea (e, nt)
Turdus rufiventris b
Turdus leucomelas
Turdus amaurochalinus
Turdus albicollis b
Mimus saturninus
Anthus lutescens
Vireo olivaceus
Hylophilus poicilotis (e)
Cyclarhis gujanensis
Parula pitiayumi
Geothlypis aequinoctialis
Basileuterus culicivorus j
Basileuterus leucoblepharus (e) j
Basileuterus rivularis
Conirostrum speciosum
Piranidea melanonota
Tangara seledon (e)
Dacnis cayana
Chlorophonia cyanea b
Euphonia chlorotica
Euphonia violacea
Euphonia chalybea (e, nt)
Euphonia cyanocephala
Euphonia pectoralis (e)
Stephanophorus diadematus
Thraupis sayaca
Tachyphonus coronatus (e) b
Habia rubica b
Trichothraupis melanops j
Pyrrhocoma ruficeps (e) j
Nemosia pileata
Hemithraupis guira
Cissopis leveriana
Tersina viridis
Saltator similis
Cyanocompsa brissonii b
Cyanoloxia glaucocaerulea
Coryphospingus cucullatus
Volatinia jacarina
Sporophila caerulescens
Oryzoborus angolensis
Amaurospiza moesta (e, nt)
Haplospiza unicolor (e) b
Sicalis flaveola
Embernagra platensis
Emberizoides herbicola
Ammodramus humeralis
Zonotrichia capensis j
Gnorimopsar chopi
Molothrus bonariensis
Molothrus rufoaxillaris
Pseudoleistes guirahuro
Sturnella superciliaris
Scaphidura oryzivora
Icterus cayanensis
Cacicus haemorrhous
Cacicus chrysopterus