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Avifauna of the Pilón Lajas Biosphere Reserve and Communal Lands, Bolivia

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Summary

Pilón Lajas Biosphere Reserve and Communal Lands (Pilón Lajas) ranges from 300 m to 1,400 m altitude in the departments of Beni and La Paz, Bolivia. It is located in the Bolivian and Peruvian lower yungas Endemic Bird Area (054) and within one of the regions of highest conservation priority in the Neotropics. Pilón Lajas includes primary evergreen tropical lowland forest, foothill forest, and lower montane forest. Vegetation heterogeneity forms the basis for the high species richness of the area. A population of approximately 600 Chiman, Moseten and Tacana indigenous people live within the reserve. Little has been published regarding the avifauna of Pilón Lajas. Here we present the results of visual observations and tape recordings of 22 ornithological surveys, recording 502 bird species. Serranía Pilón is the most intensively studied and species-rich mountain range with 332 species, 48 of which have been recorded only in this area within Pilón Lajas. We present 26 new departmental records and evidence of breeding for 42 species. The reserve protects three globally Vulnerable and three globally Near Threatened species, four species of High Conservation Priority and 32 of Medium Conservation Priority. Together with Madidi National Park and the adjacent Bahuaja Sonene National Park in south-eastern Peru, Pilón Lajas forms a unique protected area system of more than 3.5 million ha and plays an important role in the establishment of biological corridors along the eastern Andean slope in Bolivia.

Introduction

Pilón Lajas Biosphere Reserve and Communal Lands (*Reserva de la Biósfera – Tierra Comunitaria de Orígen Pilón Lajas* in Spanish, hereafter referred to as Pilón Lajas) covers *c.* 400,000 ha on the Andean foothills in north-west Bolivia (Figure 1). It is located in the Bolivian and Peruvian lower yungas Endemic Bird Area (EBA 054) of Stattersfield *et al.* (1998) and within one of the regions of highest conservation priority in the Neotropics (Stotz *et al.* 1996). Initially proposed in 1974, Pilón Lajas was recognized as a Biosphere Reserve by UNESCO in 1977 and as a Biosphere Reserve and Indigenous Territory by the Bolivian Government in 1992 (Sherholtz 1997). The area was legally designated but had no physical protection until 1994, when Veterinarians Without Frontiers (VSF) received funding from the European Union to design an operational plan for the reserve. Through an agreement with the Bolivian National Protected Areas Service, VSF has been co-administering Pilón Lajas since 1996.

Pilón Lajas is in an area with a moderate level of historic and current human activity and settlement. A population of approximately 600 Chiman, Moseten

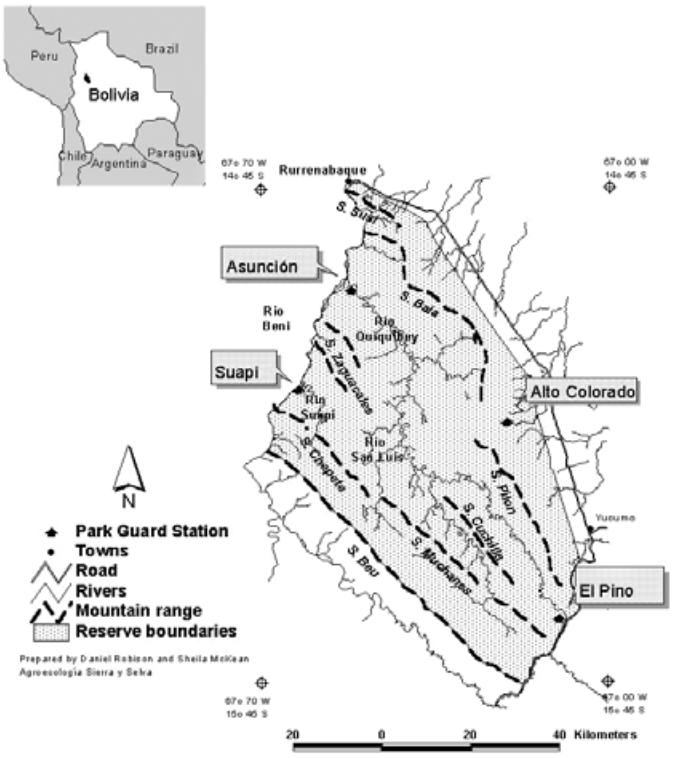

Figure 1. Map showing Pilón Lajas Biosphere Reserve, Bolivia.

and Tacana indigenous people live within the reserve. The Beni River, the western border of Pilón Lajas (Figure 1), was the principal ''highway'' between the Andes and the rubber/brazil nut forests to the north for a century until a new road was completed in 1989. This new road, forming Pilón Lajas' eastern border and connecting the area to the city of La Paz, was used for a government-sponsored colonization programme of families from other parts of the country. Many of these colonists believe they have a right to land within Pilón Lajas. Although parts of the reserve are extremely remote, requiring expeditions of several days to be reached, other parts have long been accessible. It is estimated that only 1% of Pilón Lajas has been deforested for agriculture in the last century, but perhaps 80% of the lower tropical forest has been heavily hunted during the alligator hide and wildlife skin boom in the 1960s and 1970s. Between 1980 and 1996, the mahogany lumber boom heavily affected the same area, particularly within 10 km of rivers and large streams. Up until 1996, five lumber companies with dubious legal status and approximately 300 chain sawyers selectively logged and hunted in the reserve.

The Pilón Lajas management plan has subdivided the reserve into specific zones to combine indigenous community rights with conservation initiatives. Since 1996, a core of 20 park guards (many belonging to local indigenous groups) has been hired and trained and four park guard stations have been established in highly sensitive areas along borders to protect the reserve.

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Table 1. Survey areas visited by 22 ornithological expeditions in Pilón Lajas, Bolivia, between 1989 and 1999.

Survey area	Elevational range (m)	Number of visits
Lowland forest areas	350–500	5
Serranía Bala	450–800	2
Serranía Beu	500–1,400	4
Serranía Cuchilla	450–1,000	2
Serranía Pilón	400–1,100	8
Serranía Zaguacales	400–800	1

The aim of this paper is to bring together unpublished avifaunal information into an extensive document that can be used for informed conservation decision making and land protection priority assessments. This is important for the protection and global attention of Pilón Lajas and the general Andean protected area corridor of Madidi and Bahuaja Sonene National Parks.

Methods

This paper is based on 22 unpublished ornithological surveys by 15 researchers over 148 days between 1989 and 1999 (Table 1, Appendix 1) in Pilón Lajas. The principal survey methods were non-systematic visual and acoustic observations as well as tape recordings of vocalisations. Limited mist-netting was carried out by the first author (ABH) in Serranía Cuchilla in 1999 and by F. Osorio and others (Colección Boliviana de Fauna, La Paz; Appendix 1). A small number of specimens were collected by F. Osorio and others and deposited at the Colección Boliviana de Fauna.

Altitude ranges and abundance estimates are based on survey results by ABH. ABH surveyed different points at least 200 m apart, arriving before sunrise and identifying and sound-recording vocalizations of the dawn chorus. Thereafter, different trails were surveyed, covering 1–3 km, often pausing work between 12h00 and 15h00. ABH observed, sound-recorded and verified identifications with the use of prerecorded tapes or playback, including rebound playback (broadcasting the first response to playback). Each evening ABH completed a checklist of the day's observations, noting estimated abundances, field time, distance walked and evidence (sight records, heard or tape-recorded). Abundance estimates were classified as; common, recorded (visual observation or auditory) daily in small numbers (> 5); fairly common, recorded daily in small numbers (< 5); uncommon, recorded once in three days; and rare, recorded once during the survey. Tape-recording bird vocalizations is the most effective method for rapidly surveying neotropical forest avifaunas (Parker 1991; see also Haselmayer and Quinn 2000) and is an accurate means of species identification that can be easily referenced. Over 400 recordings by ABH from Pilón Lajas have been archived at the Cornell Laboratory of Ornithology, Macaulay Library of Natural Sounds (MLNS). Fieldwork covered all months except for January, March and May, and included all habitat types within Pilón Lajas and as much area as possible with the largest gap between sites being 15 km. For the purpose of vegetation classification, we used the elevational belts of Stotz *et al.* (1996): lower

tropical forest (< 500 m), hill tropical forest (500–900 m) and upper tropical forest (900–1,600 m). This was modified as necessary by reference to topographical location (level areas, slopes, ridges, etc.), geological substrate and state of vegetation succession. It should be noted that Parker (1989) erroneously gave 1,200 m as the highest altitude of the road crossing Serranía Pilón south of Yucumo (Figure 1). Rather, as indicated by Parker *et al.* (1991) and as confirmed by our measurements, the highest point of this road is located at *c.* 1,000 m.

Study Area

Pilón Lajas is situated at 14°26′ to 15°28′S and 68°42′ to 68°02′W in Beni and La Paz departments with an altitudinal range from 300 m to 1,400 m, although there probably are a few peaks up to 1,600 m (detailed topographical maps of the area are unavailable). These mountain ranges are relatively isolated from the main Andean ridges. The nearest range of similar altitude is about 35 km to the south-west and the closest peaks above 1,400 m are about 75 km to the south of Pilón Lajas.

The vegetation of Pilón Lajas is quite varied, changing in relation to humidity, elevation and geological substrate. At Rurrenabaque (14°26′S 68°31′W, 227 m), just north of Pilón Lajas (Figure 1), mean annual precipitation is 2,150 mm with a marked peak from November to April and a mean annual temperature of 25.8 °C. The natural vegetation in about 38% of the reserve corresponds to evergreen tropical lowland forest. Higher elevations in Pilón Lajas, particularly those exposed to incoming clouds from the north-east, are somewhat cooler, receive considerably more precipitation and, above *c.* 1,000 m, are frequently shrouded in mist. Here, forests are covered in epiphytic mosses, liverworts, ferns, bromeliads and orchids, and trees are often stunted.

Geologically, the area consists mainly of schists, loams and white sandstones of Tertiary age. Flat valley bottoms with mixed alluvial, nutrient-rich soils and good water supply are periodically flooded in the rainy season and support 30–40 m tall forest with abundant palms (e.g. *Iriartea deltoidea, Socratea exorrhiza*), figs and leguminaceous trees. Gentle to fairly steep slopes are covered with forest of somewhat lower stature with up to 150 tree species and about 200 species of vascular epiphytes per ha (Seidel 1995, Smith and Killeen 1998, T. Krömer pers. com.). Above about 1,000 m the tree flora is dominated by the families Lauraceae, Leguminosae and Melastomataceae. Locally, there are dense stands of mahogany *Swietenia macrophylla*, many of which have been exploited in the last decades. Areas with white sand soils are very poor in nutrients and support a distinct and quite species-rich flora (Kessler 2001). Steep slopes, particularly at higher elevations, are characterized by unstable soils and frequent landslides and thus often support vegetation in different stages of succession, ranging from low, dense thickets to young, 10–15 m tall forest with many slender trees. The highest ridges often have shallow, leached soils and stunted, species-poor forest.

The overall picture emerging from the above combination of ecological factors is a striking heterogeneity of the vegetation that is conspicuous in the field (particularly from the air) and that forms the basis for the high biological species richness of the area. Botanically, individual vegetation types are of about average diversity compared with other Neotropical areas, but the high number of distinct vegetation types leads to an exceedingly diverse overall flora that contains

numerous elements not known elsewhere in the Bolivian Andes (Smith and Killeen 1998, Kessler 2001).

Results

Currently, 502 bird species are known from Pilón Lajas (Appendix 2), more than one third of the 1,398 species reported in Bolivia (Hennessey *et al.* 2003). We believe that this includes at least 90% of the resident bird species in the reserve. Whereas 309 species (62%) were recorded in the approximately 150,000 ha of lower tropical forest in Pilón Lajas, only 79 species were exclusively found in this zone. The lower tropical forest of Pilón Lajas appears quite species poor in comparison with other nearby lowland localities such as Alto Madidi, departamento (dpto.) La Paz, with 405 species (Parker and Bailey 1991) and the 5,000 ha Tambopata-Candamo Reserved Zone, Peru, with 572 species (Parker *et al.* 1994). This relatively low diversity may well be a result of the geographical position of Pilón Lajas on the southern edge of the Amazon basin where tropical lowland forest is limited to a narrow, 10–30 km wide belt along the Andean foothills.

Serranía Pilón is the most intensively studied and species-rich range within Pilón Lajas with 332 species, 48 of which have only been recorded in this area. Abundances of birds appear to be higher on Serranía Pilón than on comparable nearby ranges. Daily mixed-species flock encounters on serranías Bala and Cuchilla (Figure 1) as well as on Serranía Sadiri in Bolivia's Madidi National Park (ABH pers. obs.) ranged between one and three per day, whereas encounter rates on Serranía Pilón were between three and five per day. This is probably due to a higher level of precipitation in the area and the unusual topography of Serranía Pilón with several peaks, opposed to a typical single-peaked range, creating more habitat area between 600 m and 900 m.

Upper tropical forest exists in Pilón Lajas only on serranías Bue, Chepete and Muchanes. All surveys in this habitat were restricted to Serranía Beu, where 246 bird species have been recorded, 46 of which were only found in upper tropical forest. Serranía Beu is the only area in Pilón Lajas with large patches of bamboo forest between 1,200 to 1,400 m; they cover an area of approximately 300 ha.

With respect to Arribas *et al.* (1995) and Remsen and Traylor (1989), the Pilón Lajas bird list includes 26 new records for dpto. Beni and three for dpto. La Paz (Appendix 2). However, these new records by no means represent true range extensions for the respective species. Bolivian departments are formed by arbitrary political borders that have little or no value in a habitat or conservation context. For example, about 85% of the area of the department of Beni is covered by pampas (savannah grasslands) whereas less than 1% contains hill tropical forest, from where most of our new records originated.

Pilón Lajas is located approximately 25 km south of a large expanse of pampas, and its northern and eastern border is formed by a main road. Through the years, the area has seen the establishment of pampas bird species as colonists have cleared forest. In Rurrenabaque, each year more open-country species are observed as the 30 km wide forest corridor between the town and the true pampas is being settled and destroyed. With continued forest clearing activities an increasing number of open-country species and austral migrants can be

expected in open areas of Pilón Lajas with many of the former probably becoming resident along the edge of the reserve.

The majority of birds in Pilón Lajas increase their territorial singing in September/October. The full onset of the breeding season is linked with the beginning of the rainy season in November. During the rainy season there is a marked increase in insect abundance and more trees bear fruit. Local hunters claim that large mammals have more fat from February to April. We found reproductive evidence for 42 species (Appendix 2). Nest-building activity was observed between late July and mid-November (18 species), nesting activity (egg and hatchling stages) from mid-September to early November (nine species) and recent fledglings (15 species) between early October and mid-February (with two exceptions in mid-July).

Mixed-species flocks

ABH observed 45 mixed-species foraging flocks containing a total of 102 species in hill tropical forest (500–900 m). In the tropical lowlands, foraging flocks are often strictly separated into canopy and understorey flocks (e.g. Munn 1985, Jullien and Thiollay 1998). Due to the variable nature of hill tropical forest with steep slopes, landslides, cliffs, forest edges, stunted forest and tall forest, flock formations in Pilón Lajas were loosely categorized into three types: omnivorous tanager flocks, mid-canopy and understorey insectivorous mixed-species flocks.

The tanager canopy flocks were fast-moving, omnivorous flocks of the upper canopy based around *Tangara* species with Paradise Tanager *Tangara chilensis* as the nuclear species and Green-and-gold Tanager *T. schrankii*, Turquoise Tanager *T. mexicana* and Blue Dacnis *Dacnis cayana* as other characteristic species. Mid-canopy insectivorous flocks ranged from *c.* 5 m above ground to well inside the highest canopy. These flocks were slower moving and sometimes large (*c.* 40 individuals) with most species foraging for insects. Characteristic species were Slate-throated Redstart *Myioborus miniatus*, Black-spotted Barbet *Capito niger*, Masked Tityra *Tityra semifasciata*, Guira Tanager *Hemithraupis guira*, Bronze-green Euphonia *Euphonia mesochrysa*, Bay-headed Tanager *Tangara gyrola* and Tropical Parula *Parula pitiayumi*. The nuclear species of understorey insectivorous flocks was Red-crowned Ant Tanager *Habia rubica*, with Buff-throated Foliage Gleaner *Automolus ochrolaemus*, Carmiol's Tanager *Chlorothraupis carmioli*, Chestnut-tailed Antbird *Myrmeciza hemimelaena*, McConnell's Flycatcher *Mionectes macconnelli* and Tawny-crowned Greenlet *Hylophilus ochraceiceps* as other characteristic species.

However, the majority of species in these flocks in hill tropical forest were not exclusive or even particular to any of the three flock types. This strongly contrasts with the rigidly organized flocks of Amazonian lowlands (Munn 1985, Jullien and Thiollay 1998) and supports the notion that conclusions on mixed-species flock structure and organization drawn from Neotropical lowland forests cannot be generalized to all tropical forests (Jullien and Thiollay 1998, Herzog *et al.* submitted MS).

Species Accounts

Orinoco Goose *Neochen jubata*

This Near Threatened species has been observed only once in Pilón Lajas at an

unknown date in 1994 by F. Osorio and others, although indigenous people say the bird is sporadically seen on Rio Quiquebey. If a population still exists in Pilón Lajas, it will be in isolated regions away from hunters.

Harpy Eagle *Harpia harpyja*

This globally Near Threatened species has never been sighted in Pilón Lajas by trained observers. However, the Chiman and Moseten indigenous people are familiar with the bird and call it Bonij, but they do not have a name for the similar Crested Eagle *Morphnus guianensis*. ABH was shown a photo of a shot Harpy Eagle taken by an unknown tourist on the shore of the Beni River with in Pilón Lajas around 1970, proving that it did exist in the area, but the exact location of the dead bird was unclear. A Moseten elder reported that a family of Harpy Eagles exists east of S. Beu and described the species accurately as he said they ate one bird five years ago while hunting for White-bellied Spider Monkeys *Ateles belzebuth*. A Chiman hunter reported the location of a nest in Pilón Lajas south-west of the mouth of the Suapi River. We believe that a handful of Harpy Eagles still exists within Pilón Lajas, but that this population is threatened and restricted to areas with low human impact.

Southern Horned Curassow *Pauxi unicornis*

Parker (1989) gave the following account of this globally Vulnerable species from a 1989 survey in Serranía Pilón along the Caranavi-Yucumo road at the south-eastern border of Pilón Lajas: ''A man who has lived for one year near the road pass on the Serranía del Pilón accurately described this species and was certain that he had seen (eaten?) it in ridgetop forest several times. Called ''mutum''.'' This record would appear to be a communication error as the name mutún locally refers to Razor-billed Curassow *Mitu tuberosa*.

None of the 22 expeditions in Pilón Lajas, including two to inaccessible, pristine and apparently suitable habitat for this species between serranías Beu and Chepete, has resulted in a single observation of this species. Likewise, numerous interviews including a survey of local indigenous knowledge by ABH and A. Perry have failed to produce any indication that the species has ever occurred in the reserve. We believe that *Pauxi unicornis* does not exist in Pilón Lajas.

Oilbird *Steatornis caripensis*

Oilbird is a gregarious species, breeding colonially in caves. A single cave can hold up to 1,000 individuals (Thomas 1999; Duguid *in litt.* 2000). Only eight cave sites are known in Bolivia (ABH pers. obs.). Oilbirds could be threatened by habitat loss and scarcity of isolated breeding areas. On 4 November 1998, ABH and park guards observed 350 individuals leaving an inaccessible cave at 600 m on the edge of Serranía Chepete, beside the Beni River, during sunset and found fresh eggshells below the entrance to the cave.

Lanceolated Monklet *Micromonacha lanceolata*

One immature and two adults were observed for approximately 15 min on 9 December 1995 by ABH and A. Perry in the subcanopy 8 m above ground at

1,150 m on Serranía Beu, dpto. La Paz. One adult fed a small unidentified insect to the immature and then perched 30 cm away while the second adult landed beside the immature and gave it a katydid-like insect longer than its bill. The immature clasped the insect in its bill for approximately 2 min before swallowing it. The immature's breast had less clearly defined black streaks and greyer mottling than both adults. These birds were observed on a steep forested slope with many successional stages from frequent landslides to dense forest patches with young trees. Another individual was observed in Pilón Lajas by A. Perry and R. Mitchell (pers. comm.) on the eastern edge of Serranía Beu at 1,000 m on 3 December 1996. These are the second and third observation of Lanceolated Monklet in Bolivia (Arribas *et al.* 1995). The first record was obtained by S. Cardiff and J.V. Remsen (*in litt.* 1998) at Cerro Asunta Pata (15°03'S 68°28'W), dpto. La Paz, in 1993. The species was also observed in Carrasco National Park, dpto. Cochabamba, in July 1998 by A. Mee (*in litt.* 1998).

Scaled Fruiteater *Ampelioides tschudii*

Two birds, possibly a pair were noted repeatedly on Serranía Cuchilla, dpto. Beni, at 900 m in 1998 and 1999, especially by voice (MLNS 101799, 101819, 101874, 101877; Mayer 2000). On 17 November 1999 a male was observed by ABH and M. Olivera feeding an immature an orange fruit of approximately 2.5 cm in diameter and regurgitated half bill-sized black fruits. Previously known in Bolivia only from Serranía Bellavista (38 km N Caranavi), dpto. La Paz (Parker *et al.* 1980), and Río Tuichi Valley, dpto. La Paz (Perry *et al.* 1997). ABH also recorded calls of one individual (MLNS 101845) at 900 m on Serranía Sadiri (14°13'S 67°56'W) in Madidi National Park on 30 November 1999.

Subtropical Pygmy Owl *Glacidium parkeri*

C. König identified the first record of this species for Bolivia through recordings made by T.A. Parker during a 1979 expedition by the Museum of Natural Science, Louisiana State University, Baton Rouge, to Serranía Bellavista, dpto. La Paz (T.S. Schulenburg pers. comm.). B.M. Whitney (*in litt.* 2001) obtained the second record for Bolivia on Serranía Eslabon in Madidi National Park in August 1995 and the third in Pilón Lajas on Serranía Pilón at 700 m on 9 August 1997. Subsequently the species was recorded by ABH (MLNS 101656, 101689) several times on both the western (1,300 m) and eastern (1,200 m) slope of Serranía Beu and once at 750 m on Serranía Tequeje, Madidi National Park, on 6 April 2000.

Bolivian Recurvebill *Simoxenops striatus*

Until recently, this globally Vulnerable species was known from only three Bolivian localities (Parker *et al.* 1992), and Parker *et al.* (1996) considered it a high conservation and research priority. ABH observed and recorded several individuals on Serranía Beu at 800 m to 1,250 m from 17 to 24 September 1998 (MLNS 101637) and on Serranía Cuchilla at 800 m between 16 and 19 October 1998 (MLNS 101778; Mayer 2000), which represent two new localities for the species in Bolivia. Additionally, it has been found at three other new sites in dptos. La

Paz, Cochabamba and Santa Cruz by SKH and MK in 1996 and 1997. Further details will be published elsewhere.

Yungas Antwren *Myrmotherula grisea*

A single female-plumaged bird of this globally Vulnerable Bolivian endemic was seen by SKH in an understorey mixed-species flock at *c.* 850 m on Serranía Pilón on 4 August 1997, which represents the only record for Pilón Lajas. The bird was characterized by unmarked wing-coverts and warm olivish-brown upperparts with a slight rufous tinge on wings and tail (in contrast to the all-grey upperparts of the female Grey Antwren *M. menetriesii*) and it resembled a female Yungas Antwren seen and tape-recorded by SKH together with a male (both singing) in Amboró National Park (dpto. Santa Cruz). Despite the presence of apparently suitable habitat within the species's elevational range, Yungas Antwren appears to be rare in Pilón Lajas.

Phyllomyias sp.

This undescribed species was first observed and tape-recorded in June 1989 at 850–900 m on Serranía Pilón along the Caranavi–Yucumo road (Parker *et al.* 1991), who tentatively identified the birds as Planalto Tyrannulets *Phyllomyias fasciatus*. However, they noted that their vocalizations were faster and higher pitched than those of birds in south-east Brazil and north-east Argentina and concluded that ''the Serranía Pilón population may represent an undescribed form''. On 2 June 1997 SKH tape-recorded three unidentified *Phyllomyias* tyrannulets in the canopy of humid forest edge at 1,150 m at Cerro Asunta Pata, dpto. La Paz (15°03'S 68°28'W), and this recording was later identified with the help of B.M. Whitney as belonging to the same undescribed *Phyllomyias* taxon as recorded by Parker and Gell-Mann on Serranía Pilón (see Mayer 2000). On 3 September 1998, SKH and J.A. Balderrama collected two specimens at Cerro Asunta Pata and rediscovered the Serranía Pilón population at 850–1,000 m along the Caranavi–Yucumo road on 8 October 1998. Several tape-recordings from both localities show that the vocal differences noted by Parker *et al.* (1991) between Andean and south-east Brazilian populations are both consistent and significant (recordings of *P. fasciatus* from south-east Brazil provided by J. Mazar Barnett). A formal description of the species is currently in preparation (Herzog unpublished data).

It is noteworthy that despite the presence of apparently suitable hill tropical forest habitat on Serranías Beu, Cuchilla and Pilón the species has so far only been found at a single locality in Pilón Lajas, indicating that it may have a naturally patchy distribution and a small range.

Shrike-like Cotinga *Laniisoma elegans*

This globally Vulnerable species was observed by ABH on 22 September 1999 15 m above the ground on the northern side of Serranía Beu in steep-sloped hill tropical forest (850 m). This is only the second observation for Bolivia of this poorly known species (Hennessey *et al.* 2003).

Scarlet Tanager *Piranga olivacea*

This Nearctic-Neotropical migrant has suffered population declines attributed to habitat loss in its wintering range (McNair and Escobar 1993). However, its non-breeding distribution in South America is poorly known (Parker *et al.* 1996). ABH observed this species on Serranía Pilón in November 1996 and February 1997 and 1998, on Serranía Cuchilla in November 1999, and on Serranía Sadiri in Madidi National Park in November 1999. Wintering males were identified by their contrasting black wings in November, and by the splotchy breeding plumage in February. The identification of females was assumed through their presence with Scarlet Tanager males, which in February consisted of associating groups of 5–8 individuals. The species was fairly common in all years and areas. For example, on a total of seven days on Serranía Pilón during the months stated above, ABH daily observed between two and seven individuals in non-breeding plumage in mid-canopy foraging flocks of hill tropical forest (600–900 m). We believe these records from serranías Pilón, Cuchilla and Sadiri indicate that a considerable portion of the species' population winters along the humid foothills of the Bolivian Andes. This habitat is still largely unaltered in Bolivia; hence, a decline due to habitat loss is probably largely caused by the alteration of habitat in the breeding range or along the migration route of Scarlet Tanager.

Buff-rumped Warber *Basileuterus fulvicauda*

J. Ohlson (pers comm.) observed several individuals on Serranía Bala from 25 to 28 April 1999 and recorded one (Mayer 2000). Observations and recordings (MLNS 87814 and 101816) by ABH and SKH on serranías Pilón and Cuchilla have exclusively been of the similar River Warbler *Basileuterus rivularis*. The song of both species is difficult to differentiate. Thus, both species occur within at most 30 km of each other in Pilón Lajas, but the actual contact zone as well as the degree of sympatry and hybridization (if any) remain to be determined.

Discussion

Recorded from Pilón Lajas are four species of Bolivian endemics, eight species of range-restricted endemics (Stattersfield *et al.* 1998), 28 zoogeographical regional endemics (Stotz *et al.* 1996), three Vulnerable and three Near Threatened species (BirdLife International 2000), and four High Conservation Priority and 32 Medium Conservation Priority species (Parker *et al.* 1996) (Appendix 2, Table 2). Of the High and Medium Conservation Priority species, eight have their centre of abundance in lower tropical (< 500 m), nine in hill tropical (500–900 m), 17 in upper tropical (900–1,600 m) and two in middle tropical (1,600–2,600 m) forest. All High Conservation Priority species in Pilón Lajas appear to be rare, with only one record per species, except for *Simoxenops striatus*. These apparently extremely low population densities imply that optimal conditions for these species may not be met in Pilón Lajas despite the presence of apparently suitable habitat and that the reserve alone cannot warrant their effective conservation in Bolivia.

Pilón Lajas protects a healthy part of the Bolivian and Peruvian lower Yungas EBA (054) (Stattersfield *et al.* 1998). Eight range-restricted species have been

Table 2. Species in Pilón Lajas, Bolivia, listed as High and Medium Conservation Priorities by Parker *et al.* (1996) and Vulnerable (*) or Near Threatened (**) by BirdLife International (2000). Research priority and centre of abundance after Parker *et al.* (1996). Numbers in parentheses refer to the number of records.

Species	Conservation priority	Research priority	Centre of abundance	Pilón Lajas abundance
Orinoco Goose** *Neochen jubata*	High	High	Lower tropical	Very rare (1)
Fasciated Tiger Heron *Tigrisoma fasciatum*	Medium	High	Hill tropical	Very rare (2)
Solitary Eagle *Harpyhaliaetus solitarius*	Medium	Medium	Upper tropical	Very rare (2)
Harpy Eagle** *Harpia harpyja*	Medium	High	Lower tropical	Very rare (?)
Red-throated Caracara *Ibycter americanus*	Medium	Medium	Lower tropical	Fairly common
Maroon-chested Ground Dove *Claravis mondetoura*	Medium	Medium	Middle montane	Very rare (1)
Blue-and-yellow Macaw *Ara ararauna*	Medium	Medium	Lower tropical	Fairly common
Military Macaw* *Ara militaris*	Medium	Medium	Upper tropical	Uncommon
Red-billed Parrot *Pionus sordidus*	Medium	Medium	Upper tropical	Uncommon
Rufous-vented Ground Cuckoo *Neomorphus geoffroyi*	Medium	Medium	Lower tropical	Very rare (1)
Band-bellied Owl *Pulsatrix melanota*	Medium	Medium	Hill tropical	Fairly common
Silky-tailed Nightjar *Caprimulgus sericocaudatus*	Medium	Medium	Lower tropical	Very rare (1)
White-browed Hermit *Phaethornis stuarti*	Medium	Medium	Hill tropical	Very rare (1)
Rufous-crested Coquette *Lophornis delattrei*	Medium	Medium	Upper tropical	Very rare (1)
Many-spotted Hummingbird *Taphrospilus hypostictus*	Medium	Medium	Hill tropical	Very rare (1)
Crested Quetzal *Pharomachrus antisianus*	Medium	Medium	Upper tropical	Fairly common
Ash-browed Spinetail *Cranioleuca curtata*	Medium	Medium	Upper tropical	Rare
Bolivian Recurvebill* *Simoxenops striatus*	High	High	Hill tropical	Uncommon
Yungas Antwren* *Myrmotherula grisea*	High	High	Hill tropical	Very rare (1)
Rough-legged Tyrannulet *Phyllomyias burmeisteri*	Medium	Medium	Hill tropical	Uncommon
Spectacled Bristle Tyrant *Phylloscartes orbitalis*	Medium	Medium	Hill tropical	Uncommon
White-bellied Pygmy Tyrant *Myiornis albiventris*	Medium	Medium	Hill tropical	Fairly common
Yungas Tody Tyrant *Hemitriccus spodiops*	Medium	Medium	Upper tropical	Common
Buff-throated Tody Tyrant** *Hemitriccus rufigularis*	Medium	Medium	Upper tropical	Rare
Shrike-like Cotinga *Laniisoma elegans*	High	High	Upper tropical	Very rare (1)

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Table 2. Continued.

Species	Conservation priority	Research priority	Centre of abundance	Pilón Lajas abundance
Scaled Fruiteater *Ampelioides tschudii*	Medium	Medium	Upper tropical	Uncommon
Andean Cock-of-the-Rock *Rupicola peruviana*	Medium	Medium	Upper tropical	Fairly common
Orange-eared Tanager *Chlorochrysa calliparaea*	Medium	Medium	Upper tropical	Very rare (1)
Pale-winged Trumpeter *Psophia leucoptera*	Medium	Low	Lower tropical	Rare
Red-and-green Macaw *Ara chloroptera*	Medium	Low	Lower tropical	Fairly common
Upland Antshrike *Thamnophilus aroyae*	Medium	Low	Upper tropical	Fairly common
Scaled Antpitta *Grallaria guatimalensis*	Medium	Low	Upper tropical	Rare
Slaty Gnateater *Conopophaga ardesiaca*	Medium	Low	Upper tropical	Uncommon
Slaty Tanager *Creurgops dentata*	Medium	Low	Middle montane	Very rare (1)
Bronze-green Euphonia *Euphonia mesochrysa*	Medium	Low	Upper tropical	Common
Golden-eared Tanager *Tangara chrysotis*	Medium	Medium	Upper tropical	Very rare (2)

recorded of a potential 13 species found in Bolivia. The range-restricted endemism of Serranía Beu demonstrated the area to be a potential Important Bird Area. Serranía Beu and the surrounding area are sufficiently difficult to access through climbing, long hikes and the lack of road access, that the areas may be easily protected from habitat destruction through local population pressure.

Serranía Pilón is an important area in Pilón Lajas to protect foothill-specialized species. The foothill forest, though not considered specialization enough to deserve EBA status, is a unique ecosystem that deserves conservation attention. Through high levels of precipitation and the mix between lowland and Yungas species, these areas tend to be the richest sites of avian diversity on the planet. With no avifaunal data from Serranía del Tigre (13°38'S 68°40'W), mostly outside the Madidi National Park border, Serranía Pilón is the richest area of foothill forest in Bolivia. The site, with a main road travelling through the area, also contains ecotourism-sustainable development possibilities.

Pilón Lajas has common borders with Madidi National Park to the north-west and with the Moseten Indigenous Area, which applies sustainable forestry practices, to the south. However, the north- and south-eastern borders of Pilón Lajas are adjacent to major roads that have enabled human settlement on the park boundaries, posing a serious future threat to the reserve. Pilón Lajas is trying to counteract this encroachment with two park guard stations along both roads and the implementation of public education programmes. Recently a sustainable ecotourism project has been designed with a local indigenous group at the mouth of Rio Quiquebey.

Together with Madidi National Park and the directly adjacent Bahuaja Sonene

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National Park in south-eastern Peru, Pilón Lajas forms part of a unique protected area system of more than 3.5 million ha. It further represents a vital link towards foothill and montane forest areas further south and plays an important role in the establishment of biological corridors along the eastern Andean slope in Bolivia.

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Appendix 1. Ornithological surveys in Pilón Lajas, Bolivia.

Researchers	Site	Date	Period (days)
T.A. Parker	S. Pilón (600–1,000 m)	June 1989	4
F. Osorio, S. Barrera, J.F. Guerra, J. Sarmiento, L. Villalba	Quiquibey and Suapi rivers and Colorado (350–500 m)	June 1993	10
ABH	Suapi River (450 m)	November 1995	4
A. Perry, ABH	S. Beu (western end, 700–1,300 m)	December 1995	7
F. Sagot	Colorado (350–400 m)	June 1996	6
ABH, R. Silva	Colorado to Quiquibey (350–400 m)	July 1996	7
ABH	S. Bala (400–700 m)	October 1996	3
ABH, R. Mitchell	S. Bala (500–900 m)	November 1996	4
ABH	S. Pilón (600–1,000 m)	November 1996	7
A. Perry, R. Mitchell	S. Zaguacales (350–700 m)	November 1996	6
A. Perry, R. Mitchell	S. Beu (eastern end, 600–1,400 m)	December 1996	11
ABH	S. Pilón (700–750 m)	February 1997	1
ABH	S. Pilón (500–1,000 m)	April 1997	5
ABH	S. Pilón (600–1,000 m)	June 1997	7
SKH, MK	S. Pilón (450–1,000 m)	July 1997	18
B.M. Whitney, ABH	S. Pilón (400–750 m)	August 1997	3
ABH	S. Pilón (350–1,000 m)	February 1998	11
ABH	S. Beu (western end, 1,200–1,450 m)	September 1998	7
ABH	S. Beu (western end, 800–1,000 m)	September 1998	5
SKH, J.A. Balderrama	S. Pilón (450–500 m)	October 1998	4
ABH	S. Cuchilla (500–900 m)	October 1998	6
ABH	S. Cuchilla (700–900 m)	November 1999	12

Appendix 2: List of Bird species from Pilón Lajas Biosphere Reserve and Communal Lands, Departments of Beni and La Paz, Bolivia, including evidence, sites, minimum and maximum elevational records and abundance estimates.

Nomenclature and taxonomic arrangement accord with Remsen and Taylor (1989) and Arribas *et al.* (1995).
Species: *, Zoogeographical endemic (Stotz *et al.* 1996); **, Range restricted endemic (Stattersfield *et al.* 1998).***, Political endemic.
Evidence (in order of priority): SP, specimen (Coleccion Boliviana de Fauna); T, sound recording (Cornell Library of Natural Sounds); O, visual observation; A, auditory; L, local information.
Sites: 1, tropical forest; 2, Serranía Zaguacales; 3, S. Bala; 4, S. Cuchilla; 5, S. Pilón; 6 S. Beu.
Min: Minimum elevation, L, Lowland (350–500 m).
Max: Maximum elevation, The highest viable forest habitat in Pilón Lajas is 1400 m.
Abundance: C, common, recorded (visual observation or auditory) daily in small numbers (> 5); F, fairly common, recorded daily in small numbers (< 5); U, uncommon, recorded once in 3 days; R, rare, recorded once in 6 days or less, VR, recorded 4 or less times within Pilón Lajas, number of records in quotes; Mn, Northern migrant; Ms, Southern migrant; Mm; migrant from the Andes; +, including resident population.
Breeding information: NA, attending nest; NB, building nest; NE, nest with eggs; NM, collecting nest material; F, fledgling.

Species	Evidence	Sites	Min	Max	Abundance	Breeding Information
Tinamus tao Grey Tinamou	T	1–6	L	1,000	C	
Tinamus major Great Tinamou	T	1–6	L	600	F	NE 17–10–98
Crypturellus cinereus Cinereous Tinamou	A	1,2,6	L	900	R	
Crypturellus soui Little Tinamou	T	1–6	L	900	C	
Crypturellus obsoletus Brown Tinamou	T	1,3–6	L	1,300	C	
Crypturellus undulatus Undulated Tinamou	A	1,2,4–6	L	800	C	
Tachybaptus dominicus Least Grebe	O	1	L	350	VR (1Mn)	
Phalacrocorax brasilianus Neotropic Cormorant	O	1,2,6	L	500	F	
Anhinga anhinga Anhinga	O	1	L	500	F	
Tigrisoma lineatum Rufescent Tiger Heron	O	1,3,5,6	L	700	U	
Tigrisoma fasciatum Fasciated Tiger Heron	O	1,4	L	600	VR (2)	
Pilherodius pileatus Capped Heron	O	1	L	400	U	
Ardea cocoi Cocoi Heron	O	1	L	350	U	
Ardea alba Great Egret	O	1	L	350	F	
Bulbucus ibis Cattle Egret	O	1	L	400	U	
Egretta thula Snowy Egret	O	1	L	350	F	
Egretta caerulea Little Blue Heron	O	2	400	400	VR (1)	
Butorides striatus Striated Heron	O	1	350	350	VR (1)	
Agamia agami Chestnut-bellied Heron	O	2	350	350	VR (1)	

Appendix 2: Continued.

Species	Evidence	Sites	Min	Max	Abundance	Breeding Information
Mesembrinibis cayennensis Green Ibis	O	1	L	400	R	
Mycteria americana Wood Stork	O	1	L	350	VR (1)	
Jaribu mycteria Jabiru	O	1	L	350	VR (1)	
Coragyps atratus Black Vulture	O	1,3–5	L	500	C	
Cathartes aura Turkey Vulture	O	1,3,5,6	L	900	C	
Cathartes burrovianus Lesser Yellow-headed Vulture	O	1	L	350	R	
Cathartes melambrotus Greater Yellow-headed Vulture	O	1–3,6	L	350	R	
Sarcorampus papa King Vulture	O	1,4,5	L	600	U	
Chauna torquata Southern Screamer	O	1	L	350	VR (2)	
Neochen jubata Orinoco Goose	O	1	350	350	VR (1)	
Cairina moschata Muscovy Duck	O	1,6	L	600	VR (3)	
Merganetta armata Torrent Duck	O	6	700	700	VR (1Mm)	
Pandion haliaetus Osprey	O	1	L	400	VR (1Mn)	
Chondrohierax uncinatus Hook-billed Kite	O	1,3–6	L	900	U	
Elanoides forficatus Swallow-tailed Kite	O	1,3,5,6	L	1,400	F (+Mn)	
Harpagus bidentatus Double-toothed Kite	T	1,3,5	L	800	R	
Ictinia plumbea Plumbeous Kite	O	4,6	L	1,400	VR (2)	
Accipiter superciliosus Tiny Hawk	T	1,3,5,6	L	1,250	VR (4)	F 10–10–96
Accipiter bicolor Bicolored Hawk	O	1	L	350	VR (1)	
Leucopternis albicollis White Hawk	O	1,3–5	L	700	U	
Buteogallus urubitinga Great Black-hawk	O	1,6	L	600	VR (3)	
Harpyhaliaetus solitarius Solitary Eagle	O	5	L	900	VR (2)	
Buteo magnirostris Roadside Hawk	O	1,3,5	L	800	F	
Buteo brachyurus Short-tailed Hawk	O	1,3,5	L	700	R	
Buteo albicaudatus White-tailed Hawk	O	5	L	600	VR (2)	
Harpia harpyja Harpy Eagle	L	1,6	L	1,000	VR (?)	
Spizaetus tyrannus Black Hawk Eagle	O	5	800	800	VR (1)	
Spizaetus ornatus Ornate Hawk Eagle	O	1,5	L	1,000	VR (2)	
Daptrius ater Black Caracara	O	1–2	L	500	U	
Ibycter americanus Red-throated Caracara	T	1–4,6	L	700	F	
Herpetotheres cachinnans Laughing Falcon	A	1,4	L	500	U	

Appendix 2: Continued.

Species	Evidence	Sites	Min	Max	Abundance	Breeding Information
Micrastur ruficollis Barred Forest Falcon	T	1,4–6	L	1,350	F	
Micrastur gilvicollis Lined Forest Falcon	T	4–6	700	1,200	U	
Micrastur mirandollei Slaty-backed Forest Falcon	T	1,2,5	L	700	U	
Micrastur semitorquatus Collared Forest Falcon	T	1,3,5	L	900	U	
Falco rufigularis Bat Falcon	O	1,3,5	L	800	U	
Ortalis guttata Speckled Chachalaca	O	1,2,5	L	500	C	
Penelope jacquacu Spix's Guan	T	1–6	L	1,300	F	
Pipile pipile Blue-throated Piping Guan	O	1,2,4–6	L	800	U	
Mitu tuberosa Razor-billed Curassow	T	1–6	L	1,000	F	
Odontophorus gujanensis Marbled Wood Quail	T	5–6	L	600	U	
Odontophorus speciosus Rufous-breasted Wood Quail	T	6	L	1,000	R	
Odontophorus balliviani Stripe-faced Wood Quail *, **	T	6	1,300	1,400	U	F 15–09–98
Odontophorus stellatus Starred Wood Quail	A	1	L	?L	VR (1)	
Aramides cajanea Grey-necked Wood Rail	O	1,2,5,6	L	700	F	
Eurypyga helias Sunbittern	O	1,2,5	L	800	R	
Psophia leucoptera Pale-winged Trumpeter *	T	2,4–6	500	1,000	R	
Vanellus cayanus Pied Lapwing	O	1	L	500	U	
Charadrius collaris Collared Plover	O	1,2	L	500	F	
Actitis macularia Spotted Sandpiper	O	1,2,5	L	500	F	
Bartramia longicauda Upland Sandpiper	O	6	1,300	1,300	VR (1Mn)	
Phaetusa simplex Large-billed Tern	O	1	L	500	U	
Sterna superciliaris Yellow-billed Tern	O	1	L	500	U	
Rynchops niger Black Skimmer	O	1	L	500	U	
Columba speciosa Scaled Pigeon	T	1–6	L	1,400	U	
Columba plumbea Plumbeous Pigeon	T	1–6	L	1,400	C	
Columba subvinacea Ruddy Pigeon	O	1,2,5	L	800	U	
Columbina picui Picui Ground Dove	O	1,5	L	500	C	
Columbina talpacoti Ruddy Ground Dove	O	1,5	L	500	C	
Claravis pretiosa Blue Ground Dove	T	1,3,6	L	500	C	
Claravis mondetoura Maroon-chested Ground Dove	O	3	800	800	VR (1)	
Leptotila verreauxi White-tipped Dove	T	2,5	L	600	U	

Appendix 2: Continued.

Species	Evidence	Sites	Min	Max	Abundance	Breeding Information
Leptotila rufaxilla Grey fronted Dove	T	1–6	L	1,000	C	
Geotrygon frenata White-throated Quail Dove	T	6	1,000	1,400	F	
Geotrygon montana Ruddy Quail Dove	O	1,2,6	L	700	R	
Ara araurana Blue-and-yellow Macaw	O	1–4	L	600	F	
Ara militaris Military Macaw	T	5,6	700	1,400	U-R	
Ara chloroptera Red-and-green Macaw	T	1–6	L	900	F	NA 08–10–96
Ara severa Chestnut-fronted Macaw	O	1–3,5	L	600	C	
Ara manilata Red-bellied Macaw	O	1,2	L	900	R	
Aratinga leucophthalmus White-eyed Parakeet	O	1–6	L	700	C	
Aratinga mitrata Mitred Parakeet	T	4,5	900	1,400	F	
Aratinga weddellii Dusky-headed Parakeet	O	1–6	L	600	C	
Pyrrhura molinae Green-cheeked Parakeet	T	6	1,200	1,400	F	
Pyrrhura picta Painted Parakeet	T	1,4,5	L	900	U	
Brotogeris cyanoptera Cobalt-winged Parakeet	O	1–3	L	600	F	
Pionites leucogaster White-bellied Parrot *	O	1,2	L	400	U	
Pionopsitta barrabandi Orange-cheeked Parrot	O	1	L	500	VR (1)	
Pionus menstruus Blue-headed Parrot	T	1–6	L	1,000	F	
Pionus sordidus Red-billed Parrot	O	5	L	800	U	
Amazona farinosa Mealy Parrot	T	1–6	L	1,000	C	
Piaya cayana Squirrel Cuckoo	T	1–6	L	1,400	F	
Crotophaga ani Smooth-billed Ani	O	1,4,5	L	500	C	
Tapera naevia Striped Cuckoo	O	1	450	450	VR (1)	
Dromococcyx phasianellus Pheasant Cuckoo	O	1	L	450	R	
Dromococcyx pavoninus Pavonine Cuckoo	O	1,5	L	500	R	
Neomorphus geoffroyi Rufous-vented Ground Cuckoo	O	5	700	700	VR (1)	
Otus guatemalae Vermiculated Screech Owl	T	4–6	600	800	F	
Otus choliba Tropical Screech Owl	O	1,2	L	500	F	
Otus ingens Rufescent Screech Owl	T	1,4–6	900	1,300	F	
Otus watsonii Tawny-bellied Screech Owl	T	1,2,5,6	L	900	F	
Lophostrix cristata Crested Owl	O	1–6	L	600	F	
Pulsatrix perspicillata Spectacled Owl	O	1,3,5	L	600	F	

Appendix 2: Continued.

Species	Evidence	Sites	Min	Max	Abundance	Breeding Information
Pulsatrix melanota Band-bellied Owl	T	4–6	700	1,200	F	
Glaucidium hardyi Amazonian Pygmy Owl	T	1,2,5	L	700	U	
Glaucidium parkeri Subtropical Pygmy Owl	T	5,6	700	1,200	U	
Glaucidium brasilianum Ferruginous Pygmy Owl	T	1	L	600	F	
Ciccaba virgata Mottled Owl	T	1,5	L	700	U	
Ciccaba huhula Black-banded Owl	T	1,2,4–6	L	1,000	F	
Steatornis caripensis Oilbird	T	6	400	400	C	
Nyctibius grandis Great Potoo	T	1,2,6	L	800	R	
Nyctibius aethereus Long-tailed Potoo	T	1,5	L	900	R	
Nyctibius griseus Common Potoo	O	1	L	500	R	
Chordeiles rupestris Sand-colored Nighthawk	O	1	L	500	R	
Nyctidromus albicollis Parauque	O	1,4	L	500	R	
Nyctiphrynus ocellatus Ocellated Poorwill	T	5	L	900	R	
Caprimulgus rufus Rufous Nightjar	O	5	L	900	VR (2Ms)	
Caprimulgus sericocaudatus Silky-tailed Nightjar	O	1	L	500	VR (1)	
Hydropsalis climacocerca Ladder-tailed Nightjar	SP	1	L	500	VR (2)	
Streptoprocne rutila Chestnut-collared Swift	O	1	L	500	VR (1)	
Streptoprocne zonaris White-collared Swift	O	1–6	L	1,400	C	
Chaetura cinereiventris Grey-rumped Swift	O	1,5	L	900	U	
Chaetura brachyura Short-tailed Swift	O	1,5	L	1,400	F-U	
Threnetes leucurus Pale-tailed Barbthroat	O	1,4,5	L	900	R	
Phaethornis malaris Long-tailed Hermit	T	1,4–6	L	1,300	F	
Phaethornis hispidus White-bearded Hermit	O	1,3–6	L	800	U	
Phaethornis stuarti White-browed Hermit *	O	5	700	700	VR (1)	
Phaethornis ruber Reddish Hermit	T	1,3–6	L	1,400	C	
Campylopterus largipennis Grey-breasted Sabrewing	O	1,3–6	L	1,300	U	
Florisuga mellivora White-necked Jacobin	O	1,5–6	L	850	U	
Anthracothorax nigricollis Black-throated Mango	O	1,6	L	900	R	
Klais guimeti Violet-headed Hummingbird	T	3–5	700	1,000	U	
Lophornis delattrei Rufous-crested Coquette	O	5	900	900	VR (1)	
Lophornis chalybeus Festive Coquette	O	1,5	L	600	F	

Appendix 2: Continued.

Species	Evidence	Sites	Min	Max	Abundance	Breeding Information
Chlorostilbon mellisugus Blue-tailed Emerald	O	1,6	L	1,200	R	
Thalurania furcata Fork-tailed Woodnymph	O	1,5–6	L	1,400	U	
Hylocharis cyanus White-chinned Sapphire	O	1,5	L	700	R	
Chrysuronia oenone Golden-tailed Sapphire	T	1,4–5	L	900	F	
Taphrospilus hypostictus Many-spotted Hummingbird	O	5	875	875	VR (1)	
Amazilia versicolor Versicolored Emerald	O	1,5	L	900	U	
Amazilia lactea Sapphire-spangled Emerald	O	5	875	875	VR (1)	
Adelomyia melanogenys Speckled Hummingbird	O	6	1,200	1,450	F	
Polyplancta aurescens Gould's Jewelfront	T	1,4,5	L	900	U	
Heliothryx aurita Black-eared Fairy	O	5,6	875	900	VR (2)	
Calliphlox amethystina Amethyst Woodstar	O	1,5	L	800	U	
Pharomachrus antisianus Crested Quetzal	T	4,6	900	1,400	F	
Trogon melanurus Black-tailed Trogon	T	1–6	L	1,000	F	
Trogon viridis White-tailed Trogon	T	2,5,6	L	700	U	
Trogon collaris Collared Trogon	T	1,2,4,5	L	1,200	U	
Trogon curucui Blue-crowned Trogon	T	1–6	L	1,400	F	
Trogon violaceus Violaceous Trogon	O	1	L	450	U	
Electron platyrhynchum Broad-billed Motmot	O	1–6	L	1,000	U	
Baryphthengus martii Rufous Motmot	T	1–3,5,6	650	1,000	F-U	
Momotus momota Blue-crowned Motmot	T	1–3,5	L	500	F	
Ceryle torquata Ringed Kingfisher	O	1,2,4,5	L	600	F	
Chloroceryle amazona Amazon Kingfisher	T	1,2,5	L	500	U	
Chloroceryle americana Green Kingfisher	O	1,5	L	500	U	
Chloroceryle inda Green-and-rufous Kingfisher	O	2	L	500	R	
Chloroceryle aenea Pygmy Kingfisher	O	1,6	L	500	R	
Notharchus macrorhynchus White-necked Puffbird	T	4–6	600	900	U	
Bucco macrodactylus Chestnut-capped Puffbird	O	1	L	450	VR (1)	
Nystalus striolatus Striolated Puffbird	T	1,3–6	L	800	U	
Micromonacha lanceolata Lanceolated Monklet	O	6	1,150	1,200	VR (2)	
Monasa nigrifrons Black-fronted Nunbird	O	1,2	L	500	F	
Monasa morphoeus White-fronted Nunbird	O	1,2,5,6	L	500	F	

Appendix 2: Continued.

Species	Evidence	Sites	Min	Max	Abundance	Breeding Information
Chelidoptera tenebrosa Swallow-wing	O	1,4,6	L	500	U	
Galbula ruficauda Rufous-tailed Jacamar	O	1,2,5,6	L	500	F	
Capito niger Black-spotted Barbet	T	1–6	L	950	C	
Eubucco richardsoni Lemon-throated Barbet	O	1,4–6	L	850	R	
Eubucco versicolor Versicolored Barbet *	T	6	1,200	1,400	F	
Aulacorhynchus prasinus Emerald Toucanet	T	4–6	L	1,000	F	
Aulacorhynchus derbianus Chestnut-tipped Toucanet	T	5,6	800	1,400	F	
Pteroglossus inscriptus Lettered Aracari	O	6	800	800	VR (1)	
Pteroglossus flavirostris Ivory-billed Aracari	O	1,5,6	L	1,000	U	
Pteroglossus castanotis Chestnut-eared Aracari	T	1,2,5,6	L	1,000	C	
Pteroglossus beauharnaesii Curl-crested Aracari *	T	1,5	L	800	R	
Selenidera reinwardtii Golden-collared Toucanet	T	1,2,4–6	L	800	R	
Ramphastos vitellinus Channel-billed Toucan	T	1–6	L	1,400	C	
Ramphastos tucanus Red-billed Toucan	T	1–6	L	1,000	C	
Picumnus minutissimus Arrowhead Piculet	O	4,5	L	800	R	
Picumnus aurifrons Bar-breasted Piculet *	T	4,5	L	900	R	
Melanerpes cruentatus Yellow-tufted Woodpecker	T	1–6	L	700	C	
Veniliornis fumigatus Smoky-brown Woodpecker	T	6	1,300	1,400	U	
Veniliornis passerinus Little Woodpecker	O	1,3,4	L	800	U	
Veniliornis affinis Red-stained Woodpecker	O	1,5	400	1,000	F	
Piculus leucolaemus White-throated Woodpecker	T	1,3–6	L	1,000	F	
Piculus chrysochloros Golden-green Woodpecker	T	5,6	500	700	VR (3)	
Piculus rubiginosus Golden-olive Woodpecker	T	5,6	500	1,400	U	
Celeus grammicus Scale-breasted Woodpecker	T	4	900	900	VR (1)	
Celeus flavus Cream-coloured Woodpecker	O	1	L	500	R	
Dryocopus lineatus Lineated Woodpecker	O	1,5	500	1,000	R	
Campephilus melanoleucos Crimson-crested Woodpecker	O	5	400	400	VR (1)	
Campephilus rubricollis Red-necked Woodpecker	T	1–6	L	1,300	F	F 08–10–96
Dendrocincla fuliginosa Plain-brown Woodcreeper	T	1,2,4–6	L	1,000	F	
Deconychura longicauda Long-tailed Woodcreeper	T	1,5,6	L	900	U	
Sittasomus griseicapillus Olivaceous Woodcreeper	T	1,3–6	L	1,300	F	

Appendix 2: Continued.

Species	Evidence	Sites	Min	Max	Abundance	Breeding Information
Dendrexetastes rufigula Cinnamon-throated Woodcreeper	T	4,5	L	800	R	
Xiphocolaptes promeropirhynchus Strong-billed Woodcr.	T	1,4–6	L	900	F	
Dendrocolaptes certhia Barred Woodcreeper	T	1,4	L	700	F	
Dendrocolaptes picumnus Black-banded Woodcreeper	T	4–6	L	900	U	
Xiphorhynchus picus Straight-billed Woodcreeper	T	1,6	L	800	R	
Xiphorhynchus ocellatus Ocellated Woodcreeper	T	1,3,5	L	900	U	
Xiphorhynchus spixii Spix's Woodcreeper	T	1–6	L	900	F	
Xiphorhynchus guttatus Buff-throated Woodcreeper	T	1–6	L	1,000	F	
Lepidocolaptes albolineatus Lineated Woodcreeper	T	1,5,6	L	900	U	
Campylorhamphus trochilirostris Red-billed Scythebill	SP	1,5,6	L	1,300	U	
Furnarius leucopus Pale-legged Hornero	O	1	L	350	U	
Synallaxis azarae Azara's Spinetail *	T	6	1,300	1,400	F	
Synallaxis cabanisi Cabanis' Spinetail *	T	5,6	800	1,300	F	
Synallaxis gujanensis Plain-crowned Spinetail	T	1,2	L	500	F	
Cranioleuca curtata Ash-browed Spinetail	T	5,6	700	900	R	
Cranioleuca gutturata Speckled Spinetail	O	1	L	500	VR (1)	
Premnoplex brunnescens Spotted Barbtail	T	6	1,300	1,300	VR (1)	
Hyloctistes subulatus Striped Woodhaunter	O	5,6	700	1,300	VR (3)	
Ancistrops strigilatus Chestnut-winged Hookbill	O	5	800	800	VR (1)	
Simoxenops striatus Bolivian Recurvebill *, **, ***	T	4,6	700	1,300	U–R	
Philydor erythrocercus Rufous-rumped Foliage-gleaner	O	3,4	600	900	VR (3)	
Philydor erythropterus Chestnut-winged Foliage-gleaner	O	5	700	850	VR (2)	
Automolus ochrolaemus Buff-throated Foliage-gleaner	T	1,2,4–6	L	1,400	F	
Xenops rutilans Streaked Xenops	O	1,5,6	500	700	U	
Xenops minutus Plain Xenops	SP	1,5,6	600	900	U	
Sclerurus albigularis Grey-throated Leaftosser	T	3,5,6	700	800	R	
Sclerurus mexicanus Tawny-throated Leaftosser	T	4,5	700	800	U	
Cymbilaimus lineatus Fasciated Antshrike	O	1,4,5	L	1,000	F	
Taraba major Great Antshrike	O	1,2,5,6	L	1,000	C	
Thamnophilus palliatus Chestnut-backed Antshrike	T	6	1,200	1,400	R	
Thamnophilus aethiops White-shouldered Antshrike	T	1,4–6	L	1,000	F	

Appendix 2: Continued.

Species	Evidence	Sites	Min	Max	Abundance	Breeding Information
Thamnophilus schistaceus Plain-winged Antshrike	T	1–6	L	1,000	C	
Thamnophilus aroyae Upland Antshrike*, **	T	5,6	1,200	1,400	F	
Thamnophilus caerulescens Variable Antshrike	T	6	1,300	1,300	VR (1)	
Dysithamnus mentalis Plain Antvireo	T	1,3,5,6	450	1,000	F	
Thamnomanes schistogynus Bluish-slate Antshrike *	T	2,4,5	600	1,000	U	
Myrmotherula brachyura Pygmy Antwren	T	1,4,5	L	1,000	F	
Myrmotherula longicauda Stripe-chested Antwren	O	1,5	600	900	R	
Myrmotherula hauxwelli Plain-throated Antwren	O	1	L	L	VR (1)	
Myrmotherula leucophthalma White-eyed Antwren *	O	5,6	L	900	VR (2)	
Myrmotherula axillaris White-flanked Antwren	O	1,5.6	L	1,000	U	
Myrmotherula grisea Yungas Antwren *, **, ***	O	5	850	850	VR (1)	
Myrmotherula menetriesii Grey Antwren	T	4,5	L	1,000	F	
Dichrozona cincta Banded Antbird	T	4,5	500	800	U	
Herpsilochmus rufimarginatus Rufous-winged Antwren	T	2–6	L	1,000	C-F	
Drymophila devillei Striated Antbird	T	2,5,6	700	1350	F	
Cercomacra cinerascens Grey Antbird	T	1,2,4–6	L	1,000	C	
Cercomacra nigrescens Blackish Antbird	O	1	L	L	R	NM 07–10–98
Cercomacra serva Black Antbird	T	1,4–6	L	1,000	U	
Pyriglena leuconota White-backed Fire-eye	T	5,6	700	1,400	F	
Myrmoborus leucophrys White-browed Antbird	O	2	L	L	R	
Myrmoborus myotherinus Black-faced Antbird	T	1–6	L	1,400	C	
Hypocnemis cantator Warbling Antbird	T	2,5,6	L	800	C	
Percnostola leucostigma Spot-winged Antbird	O	1	L	L	VR (2)	
Myrmeciza hemimelaena Chestnut-tailed Antbird	T	1,2,4–6	L	1,200	C	NE 21–09–97
Myrmeciza atrothorax Black-throated Antbird	T	1,2,4–6	L	1,000	C	
Rhegmatorhina melanosticta Hairy-crested Antbird	T	4–6	500	900	R	
Hylophylax naevia Spot-backed Antbird	SP	1,2,4–6	L	1,000	U	
Hylophylax poecilinota Scale-backed Antbird	O	5	600	600	VR (1)	
Formicarius colma Rufous-capped Antthrush	T	1	L	500	R	
Formicarius analis Black-faced Antthrush	T	1–6	L	1,000	C	
Chamaeza campanisona Short-tailed Antthrush	T	1,5,6	1,200	1,400	C	

Appendix 2: Continued.

Species	Evidence	Sites	Min	Max	Abundance	Breeding Information
Grallaria guatimalensis Scaled Antpitta	T	5,6	700	1,000	R	
Hylopezus berlepschi Amazonian Antpitta *	O	1	350	350	VR (1)	
Conopophaga ardesiaca Slaty Gnateater *	T	6	1,200	1,400	U	
Scytalopus bolivianus White-crowned Tapaculo	T	6	1,200	1,400	C	
Phyllomyias burmeisteri Rough-legged Tyrannulet	O	5	800	1,000	U?	
Phyllomyias sclateri Sclater's Tyrannulet *	O	5	480	1,200	F	
Phyllomyias, undescribed species *, **, ***	T	1,5	875	1,000	U?	
Zimmerius gracilipes Slender-footed Tyrannulet	T	1,5,6	L	1,100	C	
Ornithion inerme White-lored Tyrannulet	O	1,3–5	L	900	U	
Camptostoma obsoletum S. Beardless Tyrannulet	O	5	800	800	VR (1Ms)	
Tyrannulus elatus Yellow-crowned Tyrannulet	O	1	L	500	VR (1)	
Myiopagis gaimardii Forest Elaenia	T	1,5	L	950	F	
Myiopagis caniceps Grey Elaenia	O	4,5	L	900	R	
Myiopagis viridicata Greenish Elaenia	O	1	L	500	?	
Elaenia albiceps White-crested Elaenia	T	5	L	1,000	R	
Elaenia obscura Highland Elaenia	O	4,5	800	950	R	
Serpophaga cinerea Torrent Tyrannulet	O	6	1,100	1,100	VR (1Mm)	
Mionectes striaticollis Streak-necked Flycatcher	T	6	1,350	1,350	VR (1Mm)	
Mionectes oleagineus Ochre-bellied Flycatcher	T	1,2,5,6	L	1,100	F	F 15–11–99
Mionectes macconnelli McConnell's Flycatcher	T	1,4–6	L	1,000	U	
Leptopogon amaurocephalus Sepia-capped Flycatcher	T	1,5,6	L	1,000	F	
Leptopogon superciliaris Slaty-capped Flycatcher	T	5,6	850	1,300	U	
Phylloscartes ophthalmicus Marble-faced Bristle Tyrant	T	5	800	1,000	R	
Phylloscartes orbitalis Spectacled Bristle Tyrant	O	5,6	700	1,000	U	
Phylloscartes flaviventris Rufous-lored Tyrannulet	O	5	900	900	VR (1)	
Corythopis torquata Ringed Antpipit	T	2,5,6	L	950	U	
Myiornis albiventris White-bellied Pygmy Tyrant *	T	2,4–6	600	1,100	F	
Myiornis ecaudatus Short-tailed Pygmy Tyrant	T	1,3–6	L	950	F	NM 27–07–97
Hemitriccus flammulatus Flammulated Tody Tyrant *	O	5	L	700	R	
Hemitriccus zosterops White-eyed Tody Tyrant	T	1,2,5,6	L	900	F	
Hemitriccus spodiops Yungas Tody Tyrant *, **, ***	T	5,6	1,200	1,400	C	

Appendix 2: Continued.

Species	Evidence	Sites	Min	Max	Abundance	Breeding Information
Hemitriccus rufigularis Buff-throated Tody Tyrant *	T	5,6	800	1,350	R	
Todirostrum plumbeiceps Ochre-faced Tody Flycatcher	O	5	L	500	U	
Todirostrum chrysocrotaphum Golden-browed Tody Flycatcher	O	1,5,6	0	1,000	R	
Ramphotrigon ruficauda Rufous-tailed Flatbill	O	1	0	600	VR (1)	
Rhynchocyclus olivaceus Olivaceous Flatbill	T	1,5	0	950	R	
Tolmomyias sulphurescens Yellow-olive Flycatcher	T	1,5,6	L	900	R	NM 02–08–97
Tolmomyias poliocephalus Grey-crowned Flycatcher	T	1,5	L	?	?	
Tolmomyias flaviventris Yellow-breasted Flycatcher	T	4	800	800	VR (2)	
Platyrinchus coronatus Golden-crowned Spadebill	O	1,2	L	600	R	
Terenotriccus erythrurus Ruddy-tailed Flycatcher	O	5	800	1,100	R	
Myiobius villosus Tawny-breasted Flycatcher	T	6	1,200	1,350	R	
Myiophobus fasciatus Bran-coloured Flycatcher	T	1,5	L	1,000	F	
Pyrrhomyias cinnamomea Cinnamon Flycatcher	O	6	900	900	VR (1Mm)	
Contopus fumigatus Smoke-coloured Pewee	O	5	500	1,000	R	
Contopus virens Eastern Wood-Pewee	T	2–5	L	1,000	C-F (Mn)	
Contopus cinereus Tropical Pewee	O	5	L	1,000	R	
Empidonax euleri Euler's Flycatcher	T	1,4–6	L	1,000	F	
Cnemotriccus fuscatus Fuscous Flycatcher	T	5	600	600	VR (1)	
Sayornis nigricans Black Phoebe	O	5,6	L	900	U	
Pyrocephalus rubinus Vermilion Flycatcher	O	1	L	500	F (Ms)	
Ochthoeca littoralis Drab Water Tyrant	O	1,2,5	L	500	F	
Muscisaxicola fluviatilis Little Ground Tyrant	O	1	L	500	F	
Knipolegus signatus Andean Tyrant *	O	5	1,200	1,200	VR (1Mm)	
Colonia colonus Long-tailed Tyrant	O	6	L	500	R	
Satrapa icterophrys Yellow-browed Tyrant	O	5	440	440	VR (1)	
Attila bolivianus White-eyed Attila	T	3, 4	450	700	U	
Attila spadiceus Bright-rumped Attila	T	1,3–6	L	1,300	F	F 21–11–99
Rhytipterna simplex Greyish Mourner	T	1–6	L	1,000	F-U	
Sirystes sibilator Sirystes	O	5	L	700	R	
Myiarchus tuberculifer Dusky-capped Flycatcher	T	1	L	500	R	
Myiarchus ferox Short-crested Flycatcher	T	1,5	L	700	F	

Appendix 2: Continued.

Species	Evidence	Sites	Min	Max	Abundance	Breeding Information
Myiarchus tyrannulus Brown-crested Flycatcher	T	1,5	L	900	U	
Pitangus sulphuratus Great Kiskadee	O	1	L	500	F	
Megarynchus pitangua Boat-billed Flycatcher	O	1,5	L	600	F	
Myiozetetes cayanensis Rusty-margined Flycatcher	T	1,5	450	800	R	
Myiozetetes similis Social Flycatcher	O	1,5	L	700	R	
Myiozetetes luteiventris Dusky-chested Flycatcher	O	1	L	500	VR (1)	
Conopias trivirgata Three-striped Flycatcher	O	6	L	900	R	
Myiodynastes chrysocephalus Golden-crowned Flycatcher	T	1,5	L	1,400	C-F	
Myiodynastes maculatus Streaked Flycatcher	T	1–3,5,6	L	1,000	F	
Myiodynastes luteiventris Sulphur-bellied Flycatcher	T	4–5	500	900	F (Mn)	
Legatus leucophaius Piratic Flycatcher	T	1–6	L	1,000	F	NA 12–10–96
Empidonomus varius Variegated Flycatcher	O	3	600	600	VR (1)	
Empidonomus aurantioatrocristatus Crowned Slaty Flycatcher	O	5	700	700	VR (1)	
Tyrannus albogularis White-throated Kingbird	O	5,6	700	950	R	
Tyrannus melancholicus Tropical Kingbird	T	1,3–6	L	1,200	C	
Tyrannus tyrannus Eastern Kingbird	O	1,4	L	500	R (Mn)	
Pachyramphus castaneus Chestnut-crowned Becard	O	1	L	L	VR (1)	
Pachyramphus polychopterus White-winged Becard	O	1,4,5	L	800	R	
Pachyramphus marginatus Black-capped Becard	O	1,4–6	L	1,000	R	
Pachyramphus minor Pink-throated Becard	T	1,3–5	L	700	U	NB 08–10–96
Pachyramphus validus Crested Becard	O	1,4	L	1,000	VR (2)	
Tityra cayana Black-tailed Tityra	O	1	L	L	VR (1)	
Tityra semifasciata Masked Tityra	T	1–6	L	1,300	F	NM 27–07–97
Laniisoma elegans Shrike-like Cotinga	O	6	850	850	VR (1)	
Ampelioides tschudii Scaled Fruiteater	T	4	850	900	R	
Laniocera hypopyrra Cinereous Mourner	O	1,4	L	500	R	
Lipaugus vociferans Screaming Piha	T	1–6	L	900	C	
Cotinga cayana Spangled Cotinga	O	1,6	L	800	VR (2)	
Gymnoderus foetidus Bare-necked Fruitcrow	O	1,6	L	600	VR (2)	
Querula purpurata Purple-throated Fruitcrow	T	1,3–6	L	900	F	
Cephalopterus ornatus Amazonian Umbrellabird	O	6	900	900	VR (1)	

Appendix 2: Continued.

Species	Evidence	Sites	Min	Max	Abundance	Breeding Information
Rupicola peruviana Andean Cock-of-the-Rock	T	6	700	1,200	U	
Schiffornis turdinus Thrush-like Manakin	T	1,2,4–6	800	1,400	F	F 06–10–98
Piprites chloris Wing-barred Manakin	T	1–6	600	1,000	F	
Tyranneutes stolzmanni Dwarf Tyrant Manakin	O	1,2,6	L	800	R	
Machaeropterus pyrocephalus Fiery-capped Manakin	SP	1,5	L	400	VR (2)	
Chiroxiphia boliviana Yungas Manakin *, **	T	5,6	1,000	1,400	C	
Pipra coronata Blue-crowned Manakin	O	2,6	600	1,200	R	
Pipra fasciicauda Band-tailed Manakin	SP	1,2	L	500	R	
Pipra chloromeros Round-tailed Manakin	T	1–6	L	800	C	
Tachycineta albiventer White-winged Swallow	O	1	L	500	C	
Progne chalybea Grey-breasted Martin	O	1	400	400	VR (1)	
Notiochelidon cyanoleuca Blue-and-white Swallow	T	3,5	700	1,400	F	
Atticora fasciata White-banded Swallow	O	1,2,4	L	500	C	
Stelgidopteryx ruficollis S. Rough-winged Swallow	O	1–5	L	900	C	
Campylorhynchus turdinus Thrush-like Wren	T	1,3–5	L	500	F	
Thryothorus genibarbis Moustached Wren	T	1–6	L	800	C	
Thryothorus guarayanus Fawn-breasted Wren	T	1	500	500	VR (1)	
Troglodytes aedon House Wren	T	1,3,5	L	1,300	F	
Henicorhina leucophrys Gray-breasted Wood-Wren	T	6	1,200	1,400	C	
Microcerculus marginatus Nightingale Wren	T	1–6	L	900	C	
Cyphorhinus arada Musician Wren	T	1	L	400	U	
Donacobius atricapillus Black-capped Donacobius	O	1,5	L	500	F	
Cinclus leucocephalus White-capped Dipper	O	6	700	700	VR (1Mm)	
Ramphocaenus melanurus Long-billed Gnatwren	T	1–5	L	900	F	
Catharus ustulatus Swainson's Thrush	T	4–6	700	1,000	F (Mn)	
Platycichla leucops Pale-eyed Thrush	T	6	1,400	1,400	VR (1)	
Turdus nigriceps Slaty Thrush	O	5	L	700	VR (2)	
Turdus amaurochalinus Creamy-bellied Thrush	T	1,3–5	L	700	F	
Turdus ignobilis Black-billed Thrush	O	1,3–5	L	1,000	F	
Turdus lawrencii Lawrence's Thrush	O	1,2	L	500	U	
Turdus hauxwelli Hauxwell's Thrush	O	1	L	L	R	

Appendix 2: Continued.

Species	Evidence	Sites	Min	Max	Abundance	Breeding Information
Turdus albicollis White-necked Thrush	O	5	L	900	F	
Cyclarhis gujanensis Rufous-browed Peppershrike	T	1,3	L	500	U	
Vireolanius leucotis Slaty-capped Shrike-Vireo	T	1,3–6	L	900	U	
Vireo olivaceus Red-eyed Vireo	T	1–6	L	1,000	F	
Vireo flavoviridis Yellow-green Vireo	O	5	700	900	R (Mn)	
Vireo leucophrys Brown-capped Vireo	O	5	600	1,000	R	
Hylophilus thoracicus Lemon-chested Greenlet	O	5,6	600	1,000	R	
Hylophilus hypoxanthus Dusky-capped Greenlet	T	1–6	L	900	C	
Hylophilus ochraceiceps Tawny-crowned Greenlet	T	1–6	L	900	C	
Ammodramus aurifrons Yellow-browed Sparrow	O	1,2,4–6	L	600	F	
Cyanocorax cyanomelas Purplish Jay	O	1,2,5	L	700	C	
Cyanocorax yncas Green Jay	T	5,6	1,200	1,400	U	
Volatinia jacarina Blue-black Grassquit	O	1	L	L	VR (1Ms)	
Sporophila collaris Rusty-collared Seedeater	O	5	L	L	VR (1Ms)	
Sporophila lineola Lined Seedeater *	O	1	L	L	VR (1Ms)	
Sporophila caerulescens Double-collared Seedeater	O	1,2,3	L	L	R (Ms)	
Sporophila castaneiventris Chestnut-bellied Seedeater	O	1	L	L	VR (2Ms)	
Oryzoborus angolensis Lesser Seedfinch	O	5	L	700	R	
Arremon taciturnus Pectoral Sparrow	T	1–6	L	1,000	C	
Paroaria gularis Red-capped Cardinal	O	1	500	500	VR (1)	
Pheucticus aureoventris Black-backed Grosbeak	T	1,3,5,6	L	1,000	C	
Parkerthraustes umeralis Yellow-shouldered Grosbeak	T	1,4–6	L	800	R	
Saltator rossus Slate-coloured Grosbeak	T	1,4,5	L	1,400	R	
Saltator maximus Buff-throated Saltator	T	1–6	L	1,400	F	
Saltator coerulescens Greyish Saltator	O	1,3,4	L	600	C	
Cyanocompsa cyanoides Blue-black Grosbeak	T	1–6	L	800	C	
Cyanocompsa brissonii Ultramarine Grosbeak	O	3	700	700	VR (1)	
Cissopis leveriana Magpie Tanager	O	1,2,4–6	0	1,300	F	
Chlorospingus ophthalmicus Common Bush Tanager	T	5,6	900	1,450	C	
Thlypopsis sordida Orange-headed Tanager	O	5	900	900	VR (1)	
Hemithraupis guira Guira Tanager	T	1,5	L	1,000	C	

Appendix 2: Continued.

Species	Evidence	Sites	Min	Max	Abundance	Breeding Information
Hemithraupis flavicollis Yellow-backed Tanager	T	1,4–6	L	1,000	F	
Nemosia pileata Hooded Tanager	O	1	L	800	R	
Chlorothraupis carmioli Carmiol's Tanager	T	1–6	L	1,200	C	
Lanio versicolor White-winged Shrike Tanager *	T	1,4–6	L	1,000	F	
Creurgops dentata Slaty Tanager *, **	O	6	1,400	1,400	VR (1)	
Tachyphonus cristatus Flame-crested Tanager	O	5	600	600	VR (1)	
Tachyphonus rufiventer Yellow-crested Tanager *	O	1,4–6	L	1,000	F	
Tachyphonus luctuosus White-shouldered Tanager	T	1,3–6	L	1,000	F	
Trichothraupis melanops Black-goggled Tanager	O	5,6	900	1,200	R	
Habia rubica Red-crowned Ant-Tanager	T	1–6	L	1,000	C	
Piranga flava Hepatic Tanager	T	1,3,5	700	1,000	F	NA 15–11–99
Piranga rubra Summer Tanager	O	4,5	L	1,800	U (Mn)	
Piranga olivacea Scarlet Tanager	O	4,5	700	1,000	F (Mn)	
Piranga leucoptera White-winged Tanager	T	5,6	700	1,200	F	
Ramphocelus carbo Silver-beaked Tanager	T	1–6	L	1,400	C	
Thraupis episcopus Blue-grey Tanagar	O	1,4	L	900	U	
Thraupis sayaca Sayaca Tanager	O	1,2,5,6	L	1,400	C	
Thraupis palmarum Palm Tanager	T	1–6	L	1,400	C	NB 20–11–99
Anisognathus flavinucha Blue-winged Mountain Tanager	O	6	1,300	1,400	U	
Euphonia chlorotica Purple-throated Euphonia	T	1,3,5,6	L	700	C	
Euphonia laniirostris Thick-billed Euphonia	T	1,3–6	L	1,200	F	NM 20–11–99
Euphonia cyanocephala Blue-hooded Euphonia	O	1	L	L	R (?Ms)	
Euphonia chrysopasta White-lored Euphonia	T	1,4–5	L	1,000	U	NM 02–08–97
Euphonia mesochrysa Bronze-green Euphonia	T	1,4–6	600	1,200	C	
Euphonia minuta White-vented Euphonia	T	1,4	L	1,000	U	
Euphonia xanthogaster Orange-bellied Euphonia	T	4–6	L	1,400	C	
Euphonia rufiventris Rufous-bellied Euphonia	T	1–6	L	1,000	F	
Chlorophonia cyanea Blue-naped Euphonia	T	1,5,6	L	1,400	U	
Chlorochrysa calliparaea Orange-eared Tanager	O	6	1,300	1,300	VR (1)	
Tangara mexicana Turquoise Tanager	T	1,4–6	L	1,300	C	NM 06–10–98
Tangara chilensis Paradise Tanager	T	1,3–6	L	1,300	C	NM 17–11–99

Appendix 2: Continued.

Species	Evidence	Sites	Min	Max	Abundance	Breeding Information
Tangara schrankii Green-and-gold Tanager	T	1–6	L	1,300	C	F 05–02–98
Tangara arthus Golden Tanager	O	5,6	700	1,400	R	
Tangara xanthocephala Saffron-crowned Tanager	O	6	1,200	1,400	U	
Tangara xanthogastra Yellow-bellied Tanager	T	1,3–6	L	1,200	F	
Tangara chrysotis Golden-eared Tanager	O	6	1,200	1,400	VR (2)	
Tangara gyrola Bay-headed Tanager	T	1–6	L	1,200	C	NM 17–11–99
Tangara ruficervix Golden-naped Tanager	O	6	1,300	1,300	VR (1)	
Tangara cyanicollis Blue-necked Tanager	O	6	1,300	1,350	VR (2)	
Tangara nigrocincta Masked Tanager	T	1,3–6	L	1,200	C	F 16–11–99
Tangara nigroviridis Beryl-spangled Tanager	O	5	1,000	1,000	VR (1)	
Dacnis lineata Black-faced Dacnis	T	1,3–6	L	1,250	F	
Dacnis flaviventer Yellow-bellied Dacnis	O	1,4,5	L	800	F	
Dacnis cayana Blue Dacnis	T	1,3–6	L	1,300	C	
Chlorophanes spiza Green Honeycreeper	T	1,4–6	0	1,400	F	
Cyanerpes caeruleus Purple Honeycreeper	T	1.4–6	0	1,000	C	
Cyanerpes cyaneus Red-legged Honeycreeper	T	1,5	0	1,200	F	F 07–02–98
Diglossa glauca Deep-blue Flowerpiercer	O	6	1,200	1,200	VR (1)	
Tersina viridis Swallow Tanager	T	1,3–6	L	1,400	U	
Parula pitiayumi Tropical Parula	T	1,3–6	0	1,300	C	
Myioborus miniatus Slate-throated Redstart	T	2,4–6	600	1,400	C	NM 06–08–97
Basileuterus bivittatus Two-banded Warbler	T	4–6	700	1,400	C	
Basileuterus coronatus Russet-crowned Warbler	T	4	800	900	F	
Basileuterus culicivorus Golden-crowned Warbler	T	1–4	L	900	F	F 19–10–98
Basileuterus tristriatus Three-striped Warbler	T	3,6	800	1,400	F	
Basileuterus fulvicauda Buff-rumped Warbler	T	3	600	600	R?	
Basileuterus rivularis River Warbler	T	1–6	L	900	F?	F 20–07–97
Conirostrum speciosum Chestnut-vented Conebill	O	1	450	450	VR (1)	
Conirostrum albifrons Capped Conebill	O	4	700	700	VR(1)	
Psarocolius decumanus Crested Oropendola	T	1–6	L	1,300	C	NA 20–10–98
Psarocolius atrovirens Dusky-green Oropendola *	T	6	400	1,400	C	NB 04–11–98

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