

The birds of Abra Patricia and the upper río Mayo, San Martín, north Peru

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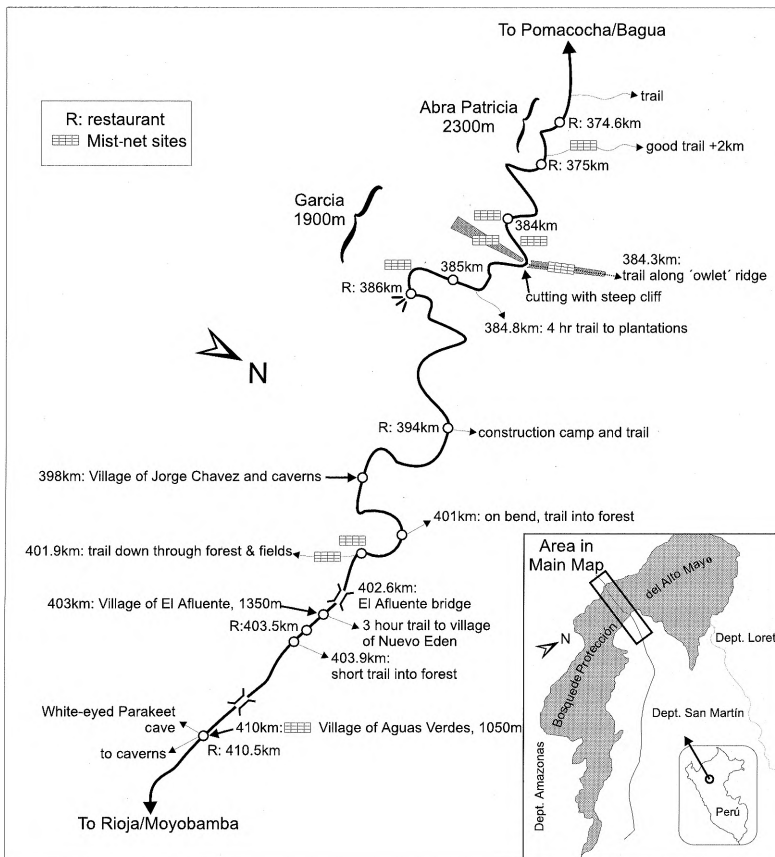
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En 1998 se llevó a cabo un inventario ornitológico en un bosque al este de Abra Patricia, Departamento San Martín, norte de Perú, en el cual se registraron 317 especies de aves. Junto con los registros previamente publicados y observaciones recientes realizadas por visitantes al área, el número de especies asciende a por lo menos 420. De éstas, 23 están clasificadas como amenazadas globalmente³, incluyendo *Xenoglaux loweryi* y *Grallaricula ochraceifrons*, ambas prácticamente desconocidas. Además, se registraron siete especies de distribución restringida. A pesar de que el 'Bosque de Protección del Alto Mayo' protege teóricamente 182,000 ha, la tala del bosque es una actividad frecuente y al parecer no existen medidas reales de control. En la actualidad se están realizando esfuerzos para conservar esta importante área.

Introduction

In northern Peru, the forest east of the Abra Patricia pass, dpto. San Martín (see Appendix 3 for coordinates) is of particular interest to ornithologists as it is the type-locality for the near-mythical Long-whiskered Owlet *Xenoglaux loweryi* and Ochre-fronted Antpitta *Grallaricula*

ochraceifrons^{10,15}. However, ornithological surveys of this area have been confined to three Louisiana State University Museum of Zoology (LSUMZ) expeditions, totalling six weeks: in 1976, 1977 and 1983^{5,15,18}. Since that period the region has been too dangerous to visit, until the recent cessation of guerilla activities.



The area is located at the northern end of the Cordillera Oriental, the easternmost range of the north Peruvian Andes, sloping eastward to the Río Mayo. It is traversed by the one paved road through the Andes in northern Peru—from Olmos, on the coastal plain, to Moyobamba, on the western edge of Amazonia. The native forest along this road has largely been cut or badly degraded, except for a remaining pristine area on the slope east of Abra Patricia, at c.2,300 m, 375 road km east of Olmos and 90 km west of Rioja, down to 1,000 m, below which it has been cleared principally for rice paddies and cash crops. This humid temperate and subtropical forest has survived due to its inaccessibility—the dirt road through it was constructed only 20 years ago. However, in 1998 the road was being rebuilt, making it one of the best graded and surfaced roads through extensive virgin forest (for 35 road km) anywhere in the Andes. The inevitable consequence of this is the arrival of settlers and opportunists, resulting in increased deforestation. This situation was clearly apparent during my visit in August 1998, with an Anglo-Swedish party, and I decided to return, with Peru-based assistants, in November 1998 to undertake a new bird survey in order to provide a sound basis for a conservation programme.

Methods

Fieldwork was conducted for 20 days in November 1998 by Jeremy Flanagan (JF) and JH, assisted by César Chávez Villavicencio (CC) and Carlos Arias for part of the time. Rob Innes and Chris Jones (RI, CJ) also spent 10 days in this period birding along and near the road and contributed their sight and sound records to the survey.

We operated 9–11 mist-nets of c.100m total length at four elevations. Net sites were on the trail at the pass (2,250–2,300 m), on and near the Garcia ridge (1,850–1,950 m), above Afluente (1,300–1,350 m) and at Aguas Verdes (1,050 m)—see Fig. 1. Most of the nets were kept open constantly, except during prolonged rain or where bats were found to be relatively common at night. All birds were measured on removal, photographed selectively, and released after a tail feather had been snipped in order to determine whether the bird was a fresh capture. Forest near the mist-net sites was surveyed, unsystematically, by the observers, from the road or main trails.

Observations from other birders that had visited the area during the previous two years were sought. Valuable contributions were received from Rose Ann Rowlett and Richard Webster (RAR, REW), Barry Walker (BW) and Dave Willis (DW). A list, drawn up by Gary Graves (GRG), of species recorded during his 1976 expedition with John O'Neill (JPO) was also made available to me.

The habitat at the LSUMZ study sites has been described in some detail^{5,15,17} but can be summarised at the lower elevations as subtropical forest of tall (50+ m) emergent trees and closed canopy at c.30 m, with a dense understorey. Canopy height decreases with altitude so that by 1,800–1,900 m it is 6–9 m in the flatter and sheltered areas but only 4–5 m on exposed ridge-tops. Frequency of rain and cloud cover is high, with most trees covered in thick moss and laden with bromeliads, orchids and ferns. Palms and emergent ferns are numerous, as are *Chusquea* bamboo thickets in places. At the pass, the canopy is still up to 9 m high with no stunted forest, but extensive deforestation has occurred in the west, with a lesser amount on the east side.

The weather was a mixture of rain and sunny intervals, wetter in the first two weeks particularly at night, with rain throughout some nights, but relatively dry in the last week. Prevailing easterly winds varied in strength from light to moderate.

Results

The total number of bird species recorded during the August and November 1998 fieldwork was 317, including 115 captured by mist-netting (353 individuals and 19 recaptures, Appendix 2). With 56 species new to the area recorded during these periods, the total for the locality becomes 420 species—see Appendix 1. Since the study period was short, data could not be analysed statistically for parameters of species abundance.

Threatened species

The 23 species currently considered by BirdLife International³ to be globally threatened (two Vulnerable and 21 Near-threatened) are listed below, with all known recent records from the area.

Hooded Tinamou *Nothocercus nigrocapillus*

Individuals seen on the trail near Abra Patricia pass on 28 August (JH) and 20 September 1998 (RAR), and one tape-recorded there on 23 November (JH). One was also heard at 1,950 m on the west side of the pass, just outside the area, on 28 October 1996 (RAR, REW).

Fasciated Tiger-heron *Tigrisoma fasciatum*

Noted as fairly common near the pass by Davis⁵, individuals on the river above Garcia on 25 September 1997 at 2,000 m²⁴ and in the same area on 27 August 1998 (JH *et al.*) are the only recent records. However, as it has been seen more frequently west of the pass, e.g. six by BW during three visits, the species appears to be regular in the survey area.

Crested Eagle *Morphnus guianensis*

One record by Parker & Parker¹⁸ but none since.

Black-and-white Hawk-eagle *Spizastur melanoleucus*

One seen well at 1,300 m on 21 September 1998 was mobbed by a Bat Falcon *Falco rufifigularis* (RAR, REW).

Orange-breasted Falcon *Falco deiroleucus*

Individuals at 1,200 and 1,600 m on 25 October 1996 and in the rocky canyon at 2,000 m on 16 January and 27 October 1996 suggest a pair was holding territory that year. Since then the preferred area has become a major quarry and staging area for road construction, and the only record has been of two at 1,300 m on 21 September 1998²⁴.

Wattled Guan *Aburria aburri*

Classified as uncommon by Parker & Parker¹⁸ and rare by Davis⁵. The only recent confirmed record was of two above Afluente in August 1998 (DW). A single guan in flight at dusk above the river at Afluente on 16 November 98 was probably this species (JH).

Spot-winged Parrotlet *Touit stictoptera*

The only known records of this Vulnerable species are of three on 16 January 1996 at 1,100 m, in the Afluente area²⁴, two at 1,800 m on 23 May 1996 (BW), five at 1,800 m on 9 November 1998 (CC), and two at 1,900 m on 10 November (JH).

Long-whiskered Owlet *Xenoglaux loweryi*

A female was mist-netted in the early morning of 22 August 1976, probably on the Garcia ridge¹⁵, and two, thought to be a pair, on 23 August in the stunted forest on the opposite side of the road (JPO *in litt.*). These were the first specimens and the only confirmed records from the locality. Two additional specimens were mist-netted c. 90 km to the west, at 2,350 m on the Cordillera de Colán, on 15 October 1978, by Tom Schulenberg (TSS)²⁰. *Xenoglaux* has not been recorded since, nor has it ever been seen for certain in the field or tape-recorded.

Despite mist-netting in the stunted forest at night we failed to find any definite evidence of this species' presence. However, we did tape-record an unknown species calling at night. It was not tape-responsive and only called occasionally, on relatively clear nights, but at 2–3 localities at 1,800–1,900 m and c. 2,300 m. It could have been *Xenoglaux* as the call was so different from any owl known to several experienced ornithologists, but it could even be attributable to a new taxon.

Napo Sabrewing *Campylopterus villavicensio*

An adult male mist-netted at Aguas Verdes on 19 November 1998, at c. 1,050 m, was the first record for the area and at the lower end of the species' known elevational range²³. In Peru it is known only from two localities: east of Moyobamba, San Martín,

where first recorded by Davis in October 1983, principally at 1,350 m, with 26 specimens obtained⁵, and the upper río Comainas (a tributary of the río Cenepa) in the Cordillera del Cóndor²¹.

Ecuadorian Piedtail *Phlogophilus hemileucurus*

Considered endemic to Ecuador until discovered at Afluente in 1977 by Parker & Parker¹⁸ who regarded it as uncommon. Individuals were seen on 26 October 1996 at 1,000 m and 21 September 1998 at 1,300 m²⁴; one was mist-netted at 1,050 m on 19 November, and several sighted at 1,350 m (RI, CJ).

Royal Sunangel *Heliangelus regalis*

This Vulnerable species was first recognised in June 1975, in the Cordillera del Cóndor, near the border with Ecuador⁸. Although not recorded at Abra Patricia by O'Neill & Graves, it was found, by Davis⁵, at 1,550 m east of Moyobamba. One was noted on 15–16 January 1996 in the stunted forest ridge at Garcia²⁴ and 1–2 males were seen near there in May 1996 (BW). At least five males were observed there on 29 August 1998, and one sub-adult male trapped (JH). In November 1998, it was fairly common along the ridge, with single adult and sub-adult males trapped.

Lanceolated Monklet *Micromonacha lanceolata*

Parker & Parker¹⁸ recorded a single individual. One was seen at 1,500 m, above Afluente, on 26 October 1996, with two in the same place on 21 September 1998²⁴, but it was not recorded during our survey.

Grey-breasted Mountain-toucan *Andigena hypoglauca*

Described as uncommon by Davis⁵ near the pass. Individuals were seen by RAR, REW and JH *et al.* in August–September at 2,100–2,300 m. More apparent during the November survey when it was recorded daily along the trail at the pass, with up to six birds feeding in one fruiting tree.

Speckle-chested Piculet *Picumnus steindachneri*

Regarded as common by Parker & Parker¹⁸, and 'fairly common, most often seen with flocks' by RAR, REW who have recorded up to eight in a day, throughout the 1,000–2,300 m elevational range but principally below 1,800 m²⁴. Relatively common in the río Afluente area in November 1998, when recorded singly or with mixed-species flocks, foraging low in dense roadside shrubbery to 10–12 m up toward the tips of thin branches (RI, CJ).

Russet-mantled Softtail *Thripophaga berlepschi*

At least two of this little-known Vulnerable species were seen well in a feeding flock in bamboo understorey at 2,250 m on 25 November 1998 (RI, CJ). A bird thought to be this species was recorded

along the same trail at the pass, in a feeding flock with other furnariids, on 28 August 1998 (JH *et al.*). Although below the published range for the species (2,550–3,350 m¹⁹ and 3,050–3,300 m²³), Davies *et al.* reported six sightings on Cordillera de Colán at 1,800–1,950 m in subcanopy and canopy mixed-species flocks⁴.

Equatorial Greytail *Xenerpestes singularis*

Found near Afluente in 1977, the first record from any locality for many years, and noted as uncommon by Parker & Parker¹⁷. One or two were seen at 1,300–1,500 m on all trips by RAR, REW with five on 21 September 1998 near Afluente—located by regular checking of mixed-species flocks within its altitudinal range²⁴. The only record during our survey was of at least three in a mixed flock at 1,300 m (RI, CJ).

Chestnut Antpitta *Grallaria blakei*

First described in 1987¹¹ and tape-recorded by Bret Whitney in August 1989 at the pass. It was classified as rare by Davis⁵, and was heard at two different localities near the pass in September–October 1997²⁴. One was trapped along the trail at the pass during the survey, and another tape-recorded 2 km further east (RI, CJ). Based on contacts with calling birds, it appears to be much scarcer than Rusty-tinted Antpitta *G. przewalskii*.

Ochre-fronted Antpitta *Grallaricula ochraceifrons*

This elusive species has a near-identical history to *Xenoglaux* and its life-history is also unknown. The first specimens, a pair, were caught at Garcia at 1,890 m on 26 August 1976 and another male was taken there on 30 August 1976¹⁰. Two other specimens were mist-netted by G. L. Graham and TSS at 1,950–1,980 m on Cordillera de Colán on 17–18 August 1978², but it has apparently been unrecorded since, contrary to some of the literature^{9,19}. We were unsuccessful in locating this species on the ridge, but on moving our mist-nets to the stunted forest on the opposite side of the road, at c.1,950m, swiftly trapped a female. However, the species was not recorded again despite two subsequent days of effort at this site.

Scarlet-breasted Fruiteater *Pipreola frontalis*

One was seen on 20 September 1998, at 1,100 m, near Puente Aguas Verdes (BW *et al.*) and four at 1,000 m on 22 September (RAR, REW); Parker & Parker¹⁸ had a single unconfirmed record.

Scaled Fruiteater *Ampelioides tshudii*

Three were observed near Puente Aguas Verdes on 27 August 1998, with individuals near Afluente on 28 August (JH *et al.*), 20 September (BW *et al.*) and

22 September (RAR, REW); Parker & Parker¹⁸ had only a single record.

Buff-throated Tody-tyrant *Hemitriccus ruficularis*

The only evidence of this widely distributed but scarce species in this area is of one seen on 26 October 1996 at 1,500 m, above Afluente²⁴. There have been a few records from the isolated mountains east of Moyobamba, dpto. San Martín, the first being those reported by Davis⁵ who found it to be uncommon at 1,350–1,450 m.

Cinnamon-breasted Tody-tyrant *Hemitriccus cinnamomeipectus*

Four specimens of this species—described from the Cordillera de Cóndor in July 1976—were taken, shortly after its initial discovery, at Garcia by JPO and GRG⁷. Three or four were seen on the Garcia ridge in August 1989 by Bret Whitney and singles were noted there in September 1997 and 1998²⁴. A pair was observed in the same place during our survey and one was trapped, while another was seen and tape-recorded in the forest on the opposite side of the road.

Bar-winged Wood-wren *Henicorhina leucoptera*

Although rarely seen, and RAR, REW found the species difficult to detect during their trips, we heard its song relatively frequently in stunted forest at 1,900–2,300 m during the survey. Two were trapped on the Garcia ridge and one on the opposite side of the road, with several others heard in both areas. It does not appear to be constrained here by the presence of Grey-breasted Wood-wren *H. leucophrys* which is common nearby, as was proposed to explain its absence on Cordillera de Colán⁴. The ecological separation of the two species would be a worthy and practicable research project here.

Other noteworthy records

Andean / Yungas Pygmy-owl *Glaucidium jardiinii* / *bolivianus*

A rufous morph *Glaucidium* was caught low in a net by the trail at 2,250 m on 21 November 1998, possibly attracted by a bird caught in the net. As it was too heavy for *G. parkeri*, it was presumed to be *G. jardiinii*, or *bolivianus* as this form south of the Marañón is sometimes considered¹², and this was later confirmed by Stefan Woltman who compared a photo with skins at the LSUMZ.

An owl seen in flight at dusk at the pass (2,300 m) on 20 November 1998 appeared to be of *Otus* size, rather than *Glaucidium*, but was not relocated and no *Otus* calls were heard. *O. petersoni*, *ingens* and *albugularis* may possibly occur at this elevation, all being recorded at Cordillera de Colán (TSS *in litt.*).

Crimson-bellied Woodpecker *Campephilus haematogaster*

A male of this secretive species was seen and tape-recorded at 1,400 m on 15 November 1998 (JF). Previously noted as rare by Parker & Parker¹⁸.

tapaculos *Scytalopus* spp.

Davis⁵ and Parker & Parker¹⁸ regarded Peruvian Rufous-vented Tapaculo *S. femoralis*¹³ as uncommon, but we found it commonly, trapping two, at 1,800 and 2,300 m, and heard many more. At lower elevations White-crowned Tapaculo *S. atratus*¹³ appeared relatively common based on vocal contacts. The vocalisation of this bird differs from that of the Ecuadorian population¹³ (RAR, REW) and is more like that of Bolivian Tapaculo *S. bolivianus*. Further work is required to resolve the taxonomic status of these populations¹³ (TSS pers. comm.). Trilling Tapaculo *S. parvirostris* was found by Whitney at the pass in August 1989¹³ and RAR, REW heard it there on both visits in 1996. The only tapaculo recorded by O'Neill and Graves, at 1,900 m, was subsequently identified as Ash-coloured *Myornis senilis* (GRG). We heard an unfamiliar species calling at 1,800–2,300 m range but failed to identify it.

Shrike-like Cotinga / Elegant Mourner*Laniisoma elegans*

This widespread but rarely seen species was classified as uncommon by Parker & Parker¹⁸, implying that it was recorded daily or every other day in small numbers. The only subsequent report was of one heard calling at Puente Aguas Verdes on 20 September 1998 (BW *et al.*).

Chestnut-crested Cotinga *Ampelion rufaxilla*

Two were noted on 24 September 1997 and eight the next day, at 2,100–2,200 m near the pass²⁴. Two on 25 November 1998, at 2,100 m, and one at 2,300 m (RI, CJ) were the only records during our survey.

Jet Manakin *Chloropipo unicolor*

Two males were mist-netted in the vicinity of Garcia—one on the ridge and one below it—but none was seen in the field. Ridgely & Tudor¹⁹ note that *Chloropipo* manakins are rarely observed. This species was also recorded by O'Neill and Graves at 1,670 m.

Inca Flycatcher *Leptopogon taczanowskii*

This restricted-range species was not recorded, surprisingly, during earlier studies but was first noted by RAR, REW on 17 January 1996 at 2,100 m, and seen by the same observers on subsequent visits. During our survey it was considered to be not uncommon near the road at 1,500–2,300 m (RI, CJ), although only one was trapped, at 2,300 m. It

occurred singly, in mixed-species feeding flocks and in small parties with dependent young.

tody-tyrant *Poecilotriccus*

A new species of *Poecilotriccus*, closely related to Rufous-crowned Tody-tyrant *P. ruficeps* found north of the Río Marañón, was discovered in the north Peruvian Andes in the late 1970s. Although considered to be a new species, its formal description is still pending. Davis⁵ regarded it as fairly common west of the pass and RAR, REW recorded several at 1,800–2,300 m on all visits, noting that it inhabits roadside second-growth shrubbery and bamboo, and also occurs in bamboo thickets within undisturbed forest²⁴. We also found it fairly common, but only at 1,800–1,900 m, where five were trapped.

Black-and-white Tody-tyrant *Poecilotriccus capitalis*

Parker & Parker¹⁸ reported two sightings of this rare and local species near Afluente while RAR, REW observed a pair on 26 October 1996 at 1,000 m. A female was trapped on 18 November 1998 and a pair seen the next day at 1,350 m—above the species' maximum elevation (1,100 m) according to Stotz *et al.*²³, although Ridgely & Tudor¹⁹ quote 1,350 m.

Ecuadorian Tyrannulet *Phylloscartes gualaquiza*

Up to five were recorded daily at 1,050–1,500 m, in the Afluente area, during August–October visits (RAR, REW, JH, BW *et al.*). This, the only known site in Peru (BW), is the southernmost limit of this restricted-range species, which occurs at 1,050–2,000 m²³.

Olive-chested Flycatcher *Myiophobus cryptoxanthus*

Parker & Parker¹⁸ made only one record of this species which is known from a few scattered localities in Ecuador and north Peru, but RAR, REW saw 1–2 at 1,100–1,500 m on three of their four trips. We observed it in August and November within the same altitudinal range, and trapped two in secondary growth at Aguas Verdes.

Olive Flycatcher *Mitrephanes olivaceus*

Two on 28 October 1996 at the pass, one on 19 September 1998 at 2,100 m east of the pass²⁴, and one on the trail at the pass on 23 November 1998 (JH) are the only records of this widespread but scarce species.

Wing-barred Piprites *Piprites chloris*

Recorded at Afluente by Parker & Parker¹⁸ who regarded it as rare, and one heard at 1,000 m on 21 September 1997 (RAR, REW). We trapped one at

the surprisingly high elevation of 1,900 m on 26 November 1998. Ridgely & Tudor¹⁹ state that the species is found mostly below 1,000 m, less often to 1,500 m. The trapped bird was yellow below and therefore presumably belonged to *tschudii*, although it did not have the yellow spectacled appearance described and illustrated¹⁹.

Andean Slaty-thrush *Turdus nigriceps*

Singles were recorded on 27 October 1996, 23 September 1997, 18 and 21 September 1998 at 1,300–1,500 m²⁴, and a first-year male was trapped on 25 November 1998 on Garcia ridge. According to Schulenberg²⁰, it is largely, if not entirely, a non-breeding visitor to eastern Peru with 86 specimens collected during 28 May–9 September and two males from Amazonas on 25 October and 3 November. The presence of a first-year bird in late November may indicate that such birds could over-summer in the north.

White-capped Tanager *Sericossypha albocristata*

A small flock frequented the Garcia area during the survey and another group of six was observed in the gorge at c.2,000 m. The latter, consisting of one adult male, a juvenile and four female-plumaged birds, fed, singly, on grubs in a large active wasp's nest for c.30 minutes on 26 November. The male was the first to feed, spending in excess of 10 minutes upside-down, attacking the nest, while a female perched above, apparently acting as sentinel. The female-types followed as did the immature, which begged for food but was not fed. This widespread but local species has been regularly observed here and was reported by Davis⁹ as uncommon.

Huallaga Tanager *Ramphocelus melanogaster*

First recorded on 16 January 1996 in the Afluente area and seen there on all subsequent trips²⁴, this restricted-range species has presumably spread from the Huallaga drainage in response to deforestation. We only found it around Aguas Verdes, where it was common.

Slaty Finch *Haplospiza rustica*

An immature of this scarce species, normally found in bamboo, was observed feeding on roadside grass seed at 1,500 m on 27 October 1996²⁴. Single female-types were caught on Garcia ridge on 29 August and 26 November 1998, and a male was seen feeding on a grassy slope at the forest edge near there on three occasions in November (JH). It is also on Graves' list for this elevation.

Other comments

Inevitably, a few scarce species recorded by earlier expeditions were not recorded during the survey or by other recent visitors, most notably Yellow-

throated Spadebill *Platyrinchus flavigularis*, recorded at 1,670 m (GRG), and Roraiman Flycatcher *Myiophobus roraimae* which was sighted once by Parker & Parker and three specimens were mist-netted¹⁸.

Altitudinal separations were noted in sister taxa, for example White-tipped *Eutoxeres aquila* and Buff-tailed Sicklebills *E. condamini*—the former occurring at 1,350 m (and 1,670–1,980 m: GRG) and the latter at 1,050 m—and Streak-necked and Olive-striped Flycatchers *Mionectes striaticollis* and *M. olivaceus*, which were principally found at 1,800–2,350m and 1,300–1,500m. *Eutoxeres aquila* is at the southern extreme of its range here, and was erroneously reported as being newly discovered east of the Río Marañón by the 1995 Cordillera de Colán expedition¹, having already been listed at Afluente by Parker & Parker¹⁸.

Two species whose form in this area was in doubt are Sharpe's Wren *Cinnycerthia olivascens* and White-browed Antbird *Myrmoborus leucophrys*. The former was definitely the form occurring here, and not *C. peruana*, while the latter was represented by the nominate race, not the newly described *koenigorum* of the Huallaga drainage¹⁶.

Northern migrants were relatively scarce during the survey apart from Swainson's Thrush *Catharus ustulatus*, which appeared numerous at 1,350–1,500 m (seven trapped in three days), and Alder Flycatcher *Empidonax alnorum*, which was not uncommon in secondary growth at Aguas Verdes. RAR and REW report some interesting observations of such migrants during four visits²⁴.

Discussion

Considering the limited survey time and the relatively small elevational range and area surveyed, the forest below Abra Patricia was confirmed to still possess a remarkably high degree of avian richness. The most significant discoveries of the survey were the presence of the threatened *Campylopterus villavicensio* and *Thripophaga berlepschi*. Other scarce species will doubtless occur; strong possibilities include Black-and-chestnut Eagle *Oroaetus isidori*, White-faced Nunbird *Hapaloptila castane* and Straw-backed Tanager *Tangara argyrofenges*. The discovery of *C. villavicensio* provides hope that other poor-soil species such as the vulnerable Ash-throated Antwren *Herpsilochmus parkeri* could occur at lower elevations. The hills above the pass have not been explored ornithologically and could hold additional threatened and restricted-range species, e.g. Pale-billed Antpitta *Grallaria carrikeri*, Large-footed Tapaculo *Scytalopus macropus* and Greater Scythebill *Campylorhamphus pucherani* (all of which occur at Cordillera de Colán, c.80 km to the west).

The avifauna of Abra Patricia is similar to that of the better known Podocarpus National Park in southern Ecuador, only 150–200 km to the north but on the opposite side of the Marañón gap. There are some significant differences, including at least 50 species not listed in Podocarpus and the presence of a number of highly localised birds at our survey site. The latter principally occur in the unique stunted cloud-forest found on isolated mountain ridges east of the main Andean cordilleras. The only other forests known to hold similar species are at Cordillera de Colán, Amazonas and Cordillera de Cóndor, Cajamarca / south-east Ecuador¹⁴. The avifauna of the former is particularly similar at higher elevations, being the only other locality where *Xenoglaux* and *G. ochraceifrons* have been found. However, it does not hold the lower-altitude specialities of Abra Patricia, probably in part because of heavy deforestation at lower elevations, nor, surprisingly, *Henicorhina leucoptera*. Fourteen threatened species have been found at Colán, some of which are restricted to elevations higher than have been explored at Abra Patricia, compared with 23 at the latter.

The forests at Abra Patricia and the upper Río Mayo are located within three Endemic Bird Areas (EBAs): 055, Ecuador–Perú east Andes; 057, Andean ridge-top forests, while the pass itself is part of 059, North-east Peruvian cordilleras²². None of these single EBAs has more than 5–6 restricted-range species, compared to at least 16 found within the entire area. The most important part is the stunted ridge-top forest in EBA 057, which totals only 3,800 km², holding as it does five of the seven restricted-range species in the EBA, all of which are globally Vulnerable or Near-threatened. The Near-threatened species include *Xenoglaux* and *G. ochraceifrons*, which Davies *et al.*⁴ have recommended for reassessment as Endangered and Vulnerable. Although the status of neither can be assessed accurately, they do appear to be confined to a specialised and threatened habitat, and this proposal therefore appears justified. The undescribed *Poecilotriccus* species, although locally common, is surely of restricted range and possibly Near-threatened.

At the lower edge of the forest, species are colonising the border region and can be expected to expand their range as deforestation proceeds; e.g. Black-billed Thrush *Turdus ignobilis*, Black-faced Tanager *Schistochlamys melanopsis*, Huallaga Tanager *Ramphocelus melanogaster* and Moriche Oriole *Icterus chryscephalus*.

Conservation

With at least 23 Red Data Book species and a further seven or more restricted-range species, the upper río Mayo forest is of immense importance. It is also home to rare mammals such as Yellow-

tailed Woolly Monkey *Lagothrix lavicauda* (JPO, GRG) and Mountain Tapir *Tapirus pinchaque* (reported by locals as relatively common) as well as a wide range of plants. The main threat to wildlife is permanent deforestation by settlers. The local government is allocating tracts, near the road at least, to Peruvians for conversion to farmland and cattle ranching, and people are travelling considerable distances to aid the process by illegally extracting timber.

We only visited a small section of this forest but 182,000 ha is classed as Bosque de Protección del Alto Mayo—Fig. 2. This was enacted by the government in 1986, at the request of local leaders in Rioja, to protect the watershed of the Río Mayo from logging. In 1994, the Universidad Nacional de Cajamarca was apparently given responsibility for the management of this forest and initiated a flora inventory, under the leadership of Michael Dillon (MOD) of the Field Museum of Chicago⁶. Two collecting expeditions were undertaken in 1997 and 1998, following two exploratory trips. Preliminary results point to high levels of diversity and new species in a variety of families have been discovered⁶. However, deforestation on the Rioja side is increasing alarmingly, such that a two-day walk is required to reach primary forest (MOD). Population growth in the Mayo valley is expanding and a constant influx of migrants has led to deep intrusions into the forest, where clear-felling and coffee planting goes unchecked, although the boundaries of the protected forest are well-known⁶. Thus the situation appears potentially similar to that at Cordillera de Colán, where in 1995 Davies *et al.*⁴ found that much of the forest had been removed since the survey in largely pristine forest in 1978, indicating of how swiftly severe deforestation can occur.

There is an urgent need to introduce effective conservation measures. The necessary legal framework and management responsibility may already be in place but without the substantial financial resource needed for law enforcement. However, the crucial higher-elevation forest, containing *Xenoglaux* and *G. ochraceifrons*, is thought to be excluded from the nominally protected area and therefore unprotected in theory as well as practice. This situation requires clarification, and if necessary, every effort should be made to have the protected zone extended to include the higher reaches.

According to Michael Dillon (*in litt.*) 'there is a core of people in Rioja fighting to save the forest, but it is an impossible task with the current governmental make-up. Peruvian collaborators are trying to educate about the consequences of clear-cutting, but to those people who are willing to pull up and leave when things are destroyed, moving on to destroy yet another area, basic rational

arguments for conservation do not work.' The possible presence of Sendero renegades, and local suspicion, even of botanists, following the traumatic times of the 1980s and early 1990s, exacerbate the problem. The NGO ProAvesPeru, based in Piura, is eager to liaise with government agencies and local conservationists, but requires funds to implement a preliminary study, hopefully in collaboration with the Universidad Nacional de Cajamarca. The project is included in the group's Action Programme (www.udep.edu.pe/CPI/proaves/reports.html).

One useful proposal is to purchase land adjacent to the new road to block access to the pristine forest (helping to prevent a wide deforested corridor splitting the forest into two parts), but ongoing funds would also be required to police such acquisitions. It may be that Peruvian conservation would benefit from an organisation specifically created to identify, purchase and manage key areas for the preservation of endangered birds, as has recently been established in Ecuador (R. S. Ridgely *in litt.*).

There is scope for ecotourism if facilities were improved. Andean Cock-of-the-Rock *Rupicola peruviana* is numerous, a wide variety of tanagers and the rare birds detailed above occur in the area, while further west Marvellous Spatuletail *Loddigesia mirabilis* and other spectacular hummingbirds, as well as the Marañón endemics, occur. Tarapoto, the gateway to the area, is already a major tourist destination for Peruvians, and a circuit could be promoted from there through Abra Patricia to Chachapoyas and Chiclayo where there are some first-rate cultural attractions and facilities (BW *in litt.*).

This is also an area that warrants further ornithological investigation, especially to survey other parts of the forest—collaboration with the plant inventory team is already being explored. Detailed work in order to unlock the secrets of *Xenoglaux* and *G. ochraceifrons* should certainly be undertaken while access is still relatively simple. There could be more surprises in store, particularly if the higher and remoter areas of forest can be explored. However, the main priority must be to preserve the core of this unique forest, which may become the last resort of *Xenoglaux*. To quote O'Neill & Graves¹⁰ on its discovery: 'To this day this strange little owl has remained as exciting to us as it was on that rainy day in northern Perú'.

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Appendix I. Birds recorded at Abra Patricia (from a few km west of the pass, east to the town of Aguas Verdes)

References are:

5. Tristan Davis, 2 km west of Abra Patricia pass at 2,300 m: 26 November–9 December 1983.
18. Ted & Susan Parker, 25–30 km east of Abra Patricia at Afluente, 1,000–1,300m: 30 August–15 September 1977.
24. Richard Webster & Rose Ann Rowlett's report on notable records from visits in January and October 1996, and September 1997 and 1998. When followed by an asterisk, the record was *in litt.* to JH, not in the report.
- G Unpublished list by Gary Graves of the LSUMZ expedition by O'Neill and Graves, 10–15 km east of Abra Patricia at 1,670–1,980 m: 21 August–5 September 1976. This is probably available in *Informe sobre el trabajo del campo en el Perú in 1976 por el personal del Musel de Zoología de la Universidad de Louisiana*, unpublished report submitted by J. P. O'Neill and G. R. Graves to the Ministerio de Agricultura, Lima, Peru.
- W Barry Walker's unpublished list of records from visits in September 1983 and 1998, and May 1996.

Codes in the second column refer to conservation status, range and migratory status of the species: RR = restricted-range, V = Vulnerable, NT = Near-threatened, Nm = Nearctic migrant.

Abundance: R = rare, no more than three records; X = present, probably recorded on more than three occasions.

Notes: Parker & Parker¹⁸ state their fieldwork was conducted at 1,000–1,300 m and their results have been included within this range. However, I suspect that they may also have recorded at slightly higher elevations and thus differences between the first two range columns should not be taken as very meaningful. Graves does not quote abundance levels, so that species in range >1,600–1,900 m solely taken from this source could be rare despite being designated X. RAR, REW do not include all records, only the most interesting.

	Status	Ref.	ELEVATION in metres				1998 survey
			1000–1300	>1300–1600	>1600–1900	>1900	
Grey Tinamou <i>Tinamus tao</i>			X				X
Hooded Tinamou <i>Nothocercus nigrocapillus</i>	NT	24				X	X
Brown Tinamou <i>Crypturellus obsoletus</i>		18	X				
Torrent Duck <i>Merganetta armata</i>		24*	R		X	R	X
Fasciated Tiger-Heron <i>Tigrisoma fasciatum</i>	NT	5,24				X	X
American Wood Stork <i>Mycteria americana</i>		W			R		
Black Vulture <i>Coragyps atratus</i>		W	X				
Turkey Vulture <i>Cathartes aura</i>		5,24*,W	R			X	X
Greater Yellow-headed Vulture <i>Cathartes melambrotus</i>		24*	R	R	R		X
Hook-billed Kite <i>Chondrohierax uncinatus</i>						X	X
Swallow-tailed Kite <i>Elanoides forficatus</i>		5,18,W	X	X	X	X	X
Double-toothed Kite <i>Harpagus bidentatus</i>		24*	R				
Plumbeous Kite <i>Ictinia plumbea</i>		24*,W	R	R			
Plain-breasted Hawk <i>Accipiter ventralis</i>		18,W	R		R		
Bicoloured Hawk <i>Accipiter bicolor</i>		W				R	
White Hawk <i>Leucopternis albicollis</i>		18	R	R			X
Black-chested Buzzard-Eagle <i>Geranoaetus melanoleucus</i>		W		X	X		X
Grey-lined Hawk <i>Asturina nitida</i>				R			X
Broad-winged Hawk <i>Buteo platypterus</i>						R	X
Roadside Hawk <i>Buteo magnirostris</i>		18,G,W	X	X	X	X	X
Short-tailed Hawk <i>Buteo brachyurus</i>		24*	R				
White-throated Hawk <i>Buteo albigula</i>		18,W	R				
Variable Hawk <i>Buteo polyosoma</i>		G,W			X		
Crested Eagle <i>Morphnus guianensis</i>	NT	18	R				
Black-and-white Hawk-eagle <i>Spizastur melanoleucus</i>	NT	24*	R				
Mountain Caracara <i>Phalacrocorax megalopterus</i>		W				R	
Black Caracara <i>Daptrius ater</i>		G		R	X		X
Barred Forest-Falcon <i>Micrastur ruficollis</i>		18,24*	X		R	R	
American Kestrel <i>Falco sparverius</i>		5,W				X	
Bat Falcon <i>Falco rufigularis</i>		24*	X				
Orange-breasted Falcon <i>Falco deiroleucus</i>	NT	24		X		R	
Speckled Chachalaca <i>Ortalis guttata</i>			X				X
Andean Guan <i>Penelope montagnii</i>						X	X
Blue-throated Piping-guan <i>Pipile cumanensis</i>		18	X				
Wattled Guan <i>Aburria aburri</i>	NT	5,18	X			R	
Sickle-winged Guan <i>Chamaepetes goudotii</i>		5		X		X	X
[Rufous-breasted] Wood-quail <i>Odontophorus [speciosus]</i>		18	R				
Upland Sandpiper <i>Bartramia longicauda</i>		G			R		
Solitary Sandpiper <i>Tringa solitaria</i>		18	X				
Spotted Sandpiper <i>Tringa macularia</i>		18	X				
Band-tailed Pigeon <i>Columba fasciata</i>		5,24*,G,W		X	X	X	X
Pale-vented Pigeon <i>Columba cayennensis</i>		W	X				X
Plumbeous Pigeon <i>Columba plumbea</i>		18,24*,W	X	X		R	X
Ruddy Pigeon <i>Columba subvinacea</i>		24*	X	X			X
White-tipped Dove <i>Leptotila verreauxi</i>		24*,W	X	X	X	R	X
White-throated Quail-dove <i>Geotrygon frenata</i>		5,24*,W		R	R	R	
<i>Bolborhynchus</i> sp.		24*			R		
Scarlet-fronted Parakeet <i>Aratinga wagleri</i>		W			X	X	X
White-eyed Parakeet <i>Aratinga leucophthalmus</i>		18,24*,W	X	X	R		X
Maroon-tailed Parakeet <i>Pyrrhura melanura</i>			X	X			X
Spot-winged Parrotlet <i>Touit stictoptera</i>	V	24,W	X		X		X
Blue-headed Parrot <i>Pionus menstruus</i>		24*,W	X	X			X
Red-billed Parrot <i>Pionus sordidus</i>		18,W	X	X	X		X
White-capped Parrot <i>Pionus seniloides</i>		5,W			X	X	
Scaly-naped Parrot <i>Amazona mercenaria</i>		5,18,G,W	X	X	X	X	X
Dark-billed Cuckoo <i>Cooccyzus melacoryphus</i>		W			R		
Black-billed Cuckoo <i>Cooccyzus erythrophthalmus</i>	Nm	24		R			
Squirrel Cuckoo <i>Piaya cayana</i>		18,W	X	X	X	X	X
Smooth-billed Ani <i>Crotophaga ani</i>			X				X
Pavonine Cuckoo <i>Dromococcyx pavoninus</i>		24			R		
Rufous-banded Owl <i>Strix albitarsus</i>						X	X
Band-bellied Owl <i>Pulsatrix melanota</i>		18,W	X	X			X
Ferruginous Pygmy-owl <i>Glaucidium brasilianum</i>		24*	R				
Yungas/ Andean Pygmy-owl <i>Glaucidium bolivianum/jardinii</i>						R	X
Long-whiskered Owllet <i>Xenoglaux loweryi</i>	NT,RR	G			R		
Common Potoo <i>Nyctibius griseus</i>		W			X	X	X
Rufous-bellied Nighthawk <i>Lurocalis rufiventris</i>		24*,W	R		X		X
Swallow-tailed Nightjar <i>Urospalis segmentata</i>		5				X	
Lyre-tailed Nightjar <i>Urospalis lyra</i>		24*,W	X		R		
Chestnut-collared Swift <i>Streptoprocne rutila</i>		5,W	X	X	X	X	X

White-collared Swift <i>Streptoprocne zonaris</i>	5,18,W	X	X	X	X	X
Grey-rumped Swift <i>Chaetura cinereiventris</i>	18,24*	X	R			X
Short-tailed Swift <i>Chaetura brachyura</i>	24*	X	X	X		X
White-tipped Swift <i>Aeronautes montivagus</i>	5,24*:W	X	X	X	X	X
Green Hermit <i>Phaethornis guy</i>		R	R			X
Tawny-bellied Hermit <i>Phaethornis symraptaphorus</i>	5,G			X	X	X
Reddish/ Grey-chinned Hermit <i>Phaethornis ruber/ griseogularis</i>	24*:W	X	R			X
White-tipped Sicklebill <i>Eutoxeres aquila</i>	18,G	X	X	X		X
Buff-tailed Sicklebill <i>Eutoxeres condaminei</i>		R				X
Blue-fronted Lancebill <i>Doryfera johannae</i>	18	X		X		
Green-fronted Lancebill <i>Doryfera ludovicae</i>	18,G	X		X		X
Napo Sabrewing <i>Campylopterus villavicensio</i>	NT,RR	R				X
Green Violetear <i>Colibri thalassinus</i>	24*:W	R		X		X
Sparkling Violetear <i>Colibri coruscans</i>	24*	X			R	
Violet-headed Hummingbird <i>Klais guimeti</i>	18	X				
Wire-crested Thorntail <i>Popelairia popelairii</i>	18	X	R			X
Blue-tailed Emerald <i>Chlorostilbon mellisugus</i>	18	X				
Fork-tailed Woodnymph <i>Thalurania furcata</i>	18,W	X				
White-chinned Sapphire <i>Hylocharis cyanus</i>	W	R				
Golden-tailed Sapphire <i>Chrysuronia oenone</i>	24*	R				
Many-spotted Hummingbird <i>Taphrospilus hypostictus</i>	24*	R				
White-bellied Hummingbird <i>Amazilia chionogaster</i>	W			R		
Speckled Hummingbird <i>Adelomyia melanogenys</i>	5,18,G,W	X	X	X	X	X
Ecuadorian Piedtail <i>Phlogophilus hemileucurus</i>	18	X	X			X
Fawn-breasted Brilliant <i>Heliodoxa rubinoides</i>	G			X		X
Violet-fronted Brilliant <i>Heliodoxa leadbeateri</i>	18,G	X		X		
White-tailed Hillstar <i>Urochroa bougveri</i>	18	R				
Bronzy Inca <i>Coeligena coeligena</i>	G,W			X		X
Collared Inca <i>Coeligena torquata</i>	5,G,W			X	X	X
Sword-billed Hummingbird <i>Ensifera ensifera</i>	5,W				X	X
Chestnut-breasted Coronet <i>Boissonneaua matthewsii</i>	5,G,W			X	X	
Amethyst-throated Sunangel <i>Helianthus amethysticollis</i>	W			X		X
Royal Sunangel <i>Helianthus regalis</i>	V,RR 24,W					X
Emerald-bellied Puffleg <i>Eriocnemis alinae</i>	5,G,W			X	X	X
Greenish Puffleg <i>Haplophadna aureliae</i>	G			X	X	X
Booted Racket-tail <i>Ocreatus underwoodii</i>	5,18,G	X	R	X	R	X
Green-tailed Trainbearer <i>Lesbia nuna</i>					R	X
Rufous-capped Thornbill <i>Chalcostigma ruficeps</i>					R	X
Long-tailed Sylph <i>Aglaocercus kingi</i>	5,18,G,W	X	X		X	X
Wedge-billed Hummingbird <i>Schistes geoffroyi</i>	18,G,W	X		X		X
Black-eared Fairy <i>Heliodytes aurita</i>	18	R				
Purple-collared Woodstar <i>Myrtis fanny</i>	24*			R		
White-bellied Woodstar <i>Acestrura mulsant</i>	24*		R	R		X
Crested Quetzal <i>Pharomachus antisianus</i>	18,G	X	X	X		X
Golden-headed Quetzal <i>Pharomachus auriceps</i>	5,24*,G,W		R	X	X	X
Collared Trogon <i>Trogon collaris</i>	24*	R				
Masked Trogon <i>Trogon personatus</i>	5,18	X	X	X	X	X
Blue-crowned Trogon <i>Trogon curucui</i>	W	R				
Green Kingfisher <i>Chloroceryle americana</i>	18	R				
Black-streaked Puffbird <i>Malacoptila fulvogularis</i>	G			X		X
Lanceolated Monklet <i>Micromonacha lanceolata</i>	NT 18,24	R	R			
White-fronted Nunbird <i>Monasa morphoeus</i>			R			X
Scarlet-crowned Barbet <i>Capito aurivirens</i>			R			X
Black-spotted Barbet <i>Capito niger</i>	24*	X				
Versicoloured Barbet <i>Eubucco versicolor</i>	24*:G,W	R	R	X		X
Emerald Toucanet <i>Aulacorhynchus prasinus</i>	24*:G		R	X	X	X
Chestnut-tipped Toucanet <i>Aulacorhynchus derbianus</i>	18,24*	R	R			X
Chestnut-eared Aracari <i>Pteroglossus castanotis</i>	24*	X				
Grey-breasted Mountain-toucan <i>Andigena hypoglaucula</i>	NT 5			X	X	X
Golden-collared Toucanet <i>Selenidera reinwardtii</i>	24*	R				
Black-mandibled Toucan <i>Ramphastos ambiguus</i>	18,24*	X	R			X
Speckle-chested Piculet <i>Picumnus steindachneri</i>	NT,RR 18,24,W	X	X	X	R	X
Yellow-tufted Woodpecker <i>Melanerpes cruentatus</i>		X				X
Smoky-brown Woodpecker <i>Veniliornis fumigatus</i>	5,18,G	X	X	X	X	X
Little Woodpecker <i>Veniliornis passerinus</i>		X				X
Golden-olive Woodpecker <i>Piculus rubiginosus</i>	18,G	X		X		
Crimson-mantled Woodpecker <i>Piculus rivolii</i>	5,G,W			X	X	X
White-throated Woodpecker <i>Piculus leucolaemus</i>	24	R				
Lineated Woodpecker <i>Dryocopus lineatus</i>		X	X			X
Powerful Woodpecker <i>Camppephilus pollens</i>	G			X		
Crimson-bellied Woodpecker <i>Camppephilus haematogaster</i>	18	X	R			X
Crimson-crested Woodpecker <i>Camppephilus melanooleucus</i>		X				X
Tyrannine Woodcreeper <i>Dendrocicla tyrannina</i>	5,G,W			X	R	X
Plain-brown Woodcreeper <i>Dendrocicla fuliginosa</i>	18	R				

Long-tailed Woodcreeper <i>Deconychura longicauda</i>		G		R	X			X
Olivaceous Woodcreeper <i>Sittosomus griseicapillus</i>		18,W	X	X				X
Wedge-billed Woodcreeper <i>Glyphorhynchus spirurus</i>			X					X
Strong-billed Woodcreeper <i>Xiphocolaptes promeropirhynchus</i>		5,18,G,W	R	R	X	R		X
Olive-backed Woodcreeper <i>Xiphorhynchus triangularis</i>		18,G	X	X	X	R		X
Spot-crowned Woodcreeper <i>Lepidocolaptes affinis</i>		5				X		X
Azara's Spinetail <i>Synallaxis azarae</i>		5,G,W		X	X	X		X
Dark-breasted Spinetail <i>Synallaxis albicularis</i>		24*	X	X				X
Rufous Spinetail <i>Synallaxis unirufa</i>		G			X	X		X
Ash-browed Spinetail <i>Cranioleuca curtata</i>		18,W	X	X				X
Russet-mantled Softtail <i>Thripophaga berlepschi</i>		NT,RR				R,RR		X
Equatorial Greytail <i>Xenerpestes singularis</i>		NT,RR	18	X	X			X
Rusty-winged Barbtail <i>Premnornis guttiligera</i>		5,G				X	X	X
Spotted Barbtail <i>Premnoplex brunnescens</i>		5,18,G,W	X	X	X	X	X	X
Pearled Treerunner <i>Margarornis squamiger</i>		5,G,W		X	X	X		X
Streaked Tuftedcheek <i>Pseudocolaptes boissonneautii</i>		5,G			X	X		X
Striped Woodhaunter <i>Hylocistis subulatus</i>				R				X
Lineated Foliage-gleaner <i>Syndactyla subalaris</i>		18,G	R			X		
Montane Foliage-gleaner <i>Anabacerthia striaticollis</i>		18	X	X				X
Buff-fronted Foliage-gleaner <i>Philydor rufus</i>		18	X	X				X
Black-billed Treehunter <i>Thripadectes melanorhynchus</i>		18	X	X				X
Striped Treehunter <i>Thripadectes holostictus</i>		5				X	X	X
Ruddy Foliage-gleaner <i>Automolus rubiginosus</i>		18	X					
Plain Xenops <i>Xenops minutus</i>					R			X
Streaked Xenops <i>Xenops rutilans</i>		5,18,G	X	X	X	X		X
Great Antshrike <i>Taraba major</i>		24*	R					
Lined Antshrike <i>Thamnophilus tenuepunctatus</i>		18,24*	X	X				X
Uniform Antshrike <i>Thamnophilus unicolor</i>		G				X	X	X
Variable Antshrike <i>Thamnophilus caerulescens</i>		5,G				X	X	X
Russet Antshrike <i>Thamnistes anabatinus</i>		18,24*	X	R				
Plain Antvireo <i>Dysithamnus mentalis</i>		18,G	X	X	X			X
Stripe-chested Antwren <i>Myrmotherula longicauda</i>			R					X
Slaty Antwren <i>Myrmotherula schisticolor</i>		18,G	X	X	X			X
Yellow-breasted Antwren <i>Herpsilochmus axillaris</i>		18,24*	X	R				
Dot-winged Antwren <i>Microhoppia quixensis</i>			R					X
Rufous-rumped Antwren <i>Terenura callinota</i>			X	X				X
Long-tailed Antbird <i>Drymophila caudata</i>		5,G,W				X	X	X
Blackish Antbird <i>Cercomacra nigrescens</i>		18,W	X	R				X
White-backed Fire-eye <i>Pyriglena leuconota</i>						X		X
White-browed Antbird <i>Myrmoborus leucophrys</i>		24	X					X
White-plumed Antbird <i>Pithys albifrons</i>					R			X
Spot-backed Antbird <i>Hylophylax naevia</i>		18	R					
Rufous-breasted Antthrush <i>Formicarius rufipectus</i>		18,G	R			X		X
Barred Antthrush <i>Chamaeza mollissima</i>		24				R		X
[Scaled] Antpitta <i>Grallaria [guatemalensis]</i>		18,24	R			R		
Rusty-tinged Antpitta <i>Grallaria przewalskii</i>		RR	5,24,W			X	X	X
Chestnut Antpitta <i>Grallaria blakei</i>		NT,RR	5,24,W			X	X	X
Ochre-breasted Antpitta <i>Grallaricula flavirostris</i>		18,G	X			X		
Rusty-breasted Antpitta <i>Grallaricula ferrugineipectus</i>		5					X	X
Ochre-fronted Antpitta <i>Grallaricula ochraceifrons</i>		G				R		X
Chestnut-crowned Gnatcatcher <i>Conopophaga castaneiceps</i>		NT,RR	18,G	R	R	X		X
Ash-coloured Tapaculo <i>Myornis senilis</i>		G				R		
Grey Tapaculo <i>Scytalopus parvirostris</i>		24*					X	
Peruvian Rufous-vented Tapaculo <i>Scytalopus femoralis</i>		5,18,W	X			X	X	X
Northern White-crowned Tapaculo <i>Scytalopus atratus</i>		24,W	X	X				X
Shrike-like Cotinga <i>Laniisoma elegans</i>		18,W	X					
Chestnut-crested Cotinga <i>Ampelion rufaxilla</i>		24					X	X
Green-and-black Fruiteater <i>Pipreola riefferii</i>		5,G			X	X	X	X
Scarlet-breasted Fruiteater <i>Pipreola frontalis</i>		NT	18,W	R				
Scaled Fruiteater <i>Ampelioides tschudii</i>		NT	18,W	R	X			X
Olivaceous Piha <i>Lipaugus cryptolophus</i>		G				X		
Screaming Piha <i>Lipaugus vociferans</i>		W	X					X
Red-ruffed Fruitcrow <i>Pyroderus scutatus</i>		18,24,G	X	X	X	X		X
Amazonian Umbrellabird <i>Cephalopterus ornatus</i>		18,W	X					X
Andean Cock-of-the-Rock <i>Rupicola peruviana</i>		18,W	X	X				X
Golden-winged Manakin <i>Masius chrysopterus</i>		18	X					
Jet Manakin <i>Chloropipo unicolor</i>		18,G	X			X		X
Wing-barred Piprites <i>Piprites chloris</i>		18	X			R		X
Streak-necked Flycatcher <i>Mionectes striaticollis</i>		5,18,G,W	R	X	X	X	X	X
Olive-striped Flycatcher <i>Mionectes olivaceus</i>		18,W	X	X				X
Inca Flycatcher <i>Leptopogon taczanowskii</i>		RR	24*	X	X	X	X	X
Slaty-capped Flycatcher <i>Leptopogon superciliosus</i>		18,24*,W	X	R				X
Bronze-olive Pygmy-tyrant <i>Pseudotriccus pelzelni</i>		18,G	R			X	X	X
Rufous-headed Pygmy-tyrant <i>Pseudotriccus ruficeps</i>		5,G				X	X	X

<i>Poecilatriccus</i> sp.	RR	5,24,G				X	X	X
Black-and-white Tody-tyrant <i>Poecilatriccus capitalis</i>		18,24	X	X				X
Black-throated Tody-tyrant <i>Hemitriccus granadensis</i>		5					X	X
Buff-throated Tody-tyrant <i>Hemitriccus rufigularis</i>	NT	24		R				
Cinnamon-breasted Tody-tyrant <i>Hemitriccus cinnamomeipectus</i>	NT,RR	24,G				X		X
Common Tody-flycatcher <i>Todirostrum cinereum</i>		18,24*	X	R				X
Black-capped Tyrannulet <i>Phyllomyias nigrocapillus</i>		5,24*				X	X	
Plumbeous-crowned Tyrannulet <i>Phyllomyias plumbeiceps</i>		24*		R	R			X
Golden-faced Tyrannulet <i>Zimmerius chrysops</i>		5,18,G	X	X		X	X	X
Mottle-backed Elaenia <i>Elaenia gigas</i>			X					X
Sierran Elaenia <i>Elaenia pallatangae</i>		5,W					X	X
White-crested Elaenia <i>Elaenia albiceps</i>		W					R	
White-tailed Tyrannulet <i>Mecocerculus poecilocercus</i>							X	X
Rufous-winged Tyrannulet <i>Mecocerculus calopterus</i>		18,24	X			R		
Sulphur-bellied Tyrannulet <i>Mecocerculus minor</i>		5,W				X	X	X
Torrent Tyrannulet <i>Serpophaga cinerea</i>		18,24*,W	X	X			X	X
Marble-faced Bristle-tyrant <i>Phylloscartes ophthalmicus</i>		18	X	X				X
Spectacled Bristle-tyrant <i>Phylloscartes orbitalis</i>				R				X
Variiegated Bristle-tyrant <i>Phylloscartes poecilotis</i>		G					X	
Ecuadorian Tyrannulet <i>Phylloscartes gualaquizae</i>	RR	24,W	X	R				X
Scale-crested Pygmy-tyrant <i>Lophotriccus pileatus</i>		18,W	X	X				X
Fulvous-breasted Flatbill <i>Rhynchocycyl fulvipectus</i>		18	X			X		X
Yellow-olive Flycatcher <i>Talmomyias sulphurescens</i>		18	X	[R]				X
White-throated Spadebill <i>Platyrinchus mystaceus</i>		18,G	X	R		X		X
Yellow-throated Spadebill <i>Platyrinchus flavigularis</i>		G				X		
Ornate Flycatcher <i>Myiotoxicus ornatus</i>		18,24*,G	R	X		X		X
Flavescens Flycatcher <i>Myiophobus flavicans</i>		G				X	X	X
Orange-crested Flycatcher <i>Myiophobus phoenicomitra</i>		18	X					
Roraiman Flycatcher <i>Myiophobus roraimae</i>		18	R					
Bran-coloured Flycatcher <i>Myiophobus fasciatus</i>				R				X
Olive-chested Flycatcher <i>Myiophobus cryptoxanthus</i>	RR	18,24	X	X				X
Tawny-breasted Flycatcher <i>Myiobius villosus</i>		18	X	R				X
Cinnamon Flycatcher <i>Pyrrhomyias cinnamomea</i>		5,18,24,G,W	X	X		X	X	X
Cliff Flycatcher <i>Hirundinea ferruginea</i>		24*,G,W	X	X		X	X	X
Alder Flycatcher <i>Empidonax alnorum</i>	Nm		X					X
Olive Flycatcher <i>Mitrephanes olivaceus</i>		24					X	X
Olive-sided Flycatcher <i>Contopus cooperi</i>	Nm	24	R					
Smoke-coloured Pewee <i>Contopus fumigatus</i>		5,18,24,G,W	X	X		X	X	X
Western Wood-pewee <i>Contopus sordidulus</i>	Nm	24	X					
Eastern Wood-pewee <i>Contopus virens</i>	Nm	24	R					
Black Phoebe <i>Sayornis nigricans</i>		18,W	X	X				X
Vermilion Flycatcher <i>Pyrocephalus rubinus</i>			X					X
Golden-browed Chat-tyrant <i>Silvicolitrix pulchella</i>		5				R	X	X
Slaty-backed Chat-tyrant <i>Ochthoeca cinnamomeiventris</i>		W					X	X
Streak-throated Bush-tyrant <i>Myiotheretes striatocollis</i>						R		X
Andean Tyrant <i>Knipolegus signatus</i>		5,24				X	X	X
Rufous-tailed Tyrant <i>Knipolegus poecilurus</i>		24,W	X	X		X		X
Long-tailed Tyrant <i>Colonia colonus</i>		18,W	X					X
Greyish Mourner <i>Rhytipterna simplex</i>		18	X					
Dusky-capped Flycatcher <i>Myiarchus tuberculifer</i>		18	X					X
Pale-edged Flycatcher <i>Myiarchus cephalotes</i>		18,G	R			X		
Tropical Kingbird <i>Tyrannus melancholicus</i>		18,24*,W	X	R		R	R	X
Eastern Kingbird <i>Tyrannus tyrannus</i>	Nm	24	X	X		X		
Lemon-browed Flycatcher <i>Conopias cinchoneti</i>		18,W	X	R				X
Golden-crowned Flycatcher <i>Myiodynastes chrysocephalus</i>		24*	X				R	
Streaked Flycatcher <i>Myiodynastes maculatus</i>		24*	X					
Social Flycatcher <i>Myiozetetes similis</i>		18	R					X
Grey-capped Flycatcher <i>Myiozetetes granadensis</i>		24*		R				
Piratic Flycatcher <i>Legatus leucophaeus</i>		18	X					
Great Kiskadee <i>Pitangus sulphuratus</i>			X					X
Thrush-like Schiffornis <i>Schiffornis turdinus</i>		18	X	R				X
Yellow-cheeked Becard <i>Pachyramphus xanthogenys</i>		24		R				
Barréd Becard <i>Pachyramphus versicolor</i>		5,24*,18		X		X	X	X
Chestnut-crowned Becard <i>Pachyramphus castaneus</i>			X					X
White-winged Becard <i>Pachyramphus polychopterus</i>			R					X
Black-and-white Becard <i>Pachyramphus albogriseus</i>		24*					R	
Black-tailed Tityra <i>Tityra cayana</i>		24*	R					
Masked Tityra <i>Tityra semifasciata</i>		18	X					X
White-collared Jay <i>Cyanolyca viridicyana</i>		5,W					R	X
Violaceous Jay <i>Cyanocorax violaceus</i>			R					X
Green Jay <i>Cyanocorax yncas</i>		18,G	X	X		X		X
Rufous-browed Peppershrike <i>Cyclarhis gujanensis</i>		5,G				X	X	X
Slaty-capped Shrike-vireo <i>Vireolanus leucotis</i>		18	X	R				X
Red-eyed Vireo <i>Vireo olivaceus</i>		24*	X					

Brown-capped Vireo <i>Vireo leucophrys</i>		18,24*,W		X	X	X	X
Olivaceous Greenlet <i>Hylophilus olivaceus</i>		18,24*	X	X			X
White-capped Dipper <i>Cinclus leucocephalus</i>		W	X				X
Andean Solitaire <i>Myadestes ralloides</i>		24*,G	R	X	X	X	X
White-eared Solitaire <i>Entomodestes leucotis</i>		5, 18,24*	X	X	X	X	X
Slaty-backed Nightingale-thrush <i>Catharus fuscater</i>				X	X		X
Spotted Nightingale-thrush <i>Catharus dryas</i>		18,G	X	X	X		X
Swainson's Thrush <i>Catharus ustulatus</i>	Nm	5,24	X	X	X	X	X
Pale-eyed Thrush <i>Platycichla leucops</i>		18	X	X			X
Great Thrush <i>Turdus fuscater</i>		5			X	X	X
Glossy-black Thrush <i>Turdus serranus</i>		5,G			X	X	X
Andean Slaty-Thrush <i>Turdus nigriceps</i>		24,G		X	X	X	X
Black-billed Thrush <i>Turdus ignobilis</i>		24*	X	R			X
White-necked Thrush <i>Turdus albicollis</i>		18	X				
Black-capped Donacobius <i>Donacobius atricapillus</i>			X				X
Thrush-like Wren <i>Campylorhynchus turdinus</i>		24*	X	R			X
Grey-mantled Wren <i>Odontorchilus branickii</i>		18,24*,G	X	X	X	X	X
Sharpe's Wren <i>Cinnycerthia olivacens</i>		G,W			X	X	X
House Wren <i>Troglodytes aedon</i>		5, 18,24,G,W	X	X	X	X	X
Mountain Wren <i>Troglodytes solstitialis</i>		5,G			X	X	X
Grey-breasted Wood-wren <i>Henicorhina leucophrys</i>		5, 18,24,G,W	X	X	X	X	X
Bar-winged Wood-wren <i>Henicorhina leucoptera</i>	NT,RR	24,G			X	X	X
Chestnut-breasted Wren <i>Cyphorhinus thoracicus</i>		18	X	X	X	X	X
Grey-breasted Martin <i>Pragne chalybea</i>		24*	R				
Blue-and-white Swallow <i>Notiochelidon cyanoleuca</i>		18,G	X	X	X	X	X
Southern Rough-winged Swallow <i>Stelgidopteryx ruficollis</i>		18	X				X
Hooded Siskin <i>Carduelis magellanica</i>					X		X
Olivaceous Siskin <i>Carduelis olivacea</i>		18,24*	X	X	X	X	X
Tropical Parula <i>Parula pitiayumi</i>		18,24*	X	X	R		X
Blackburnian Warbler <i>Dendroica fusca</i>	Nm	5,24	R	X	X	X	X
Cerulean Warbler <i>Dendroica cerulea</i>	Nm	24	R				
Canada Warbler <i>Wilsonia canadensis</i>	Nm	24	X	X	X		X
Slate-throated Redstart <i>Myioborus miniatus</i>		18,G	X	X	X		X
Spectacled Redstart <i>Myioborus melanocephalus</i>		5,W			X	X	X
Citrine Warbler <i>Basileuterus luteoviridis</i>		5,W				X	X
Russet-crowned Warbler <i>Basileuterus coronatus</i>		5,G			X	X	X
Three-striped Warbler <i>Basileuterus tristriatus</i>		18,G	X	X	X		X
Buff-rumped Warbler <i>Basileuterus fulvicauda</i>		18	X	R			X
Rufous-collared Sparrow <i>Zonotrichia capensis</i>		5,24*,G	X	X	X	X	X
Yellow-browed Sparrow <i>Ammodramus aurifrons</i>		18	X				X
Orange-billed Sparrow <i>Arremon aurantirostris</i>		24*	X	R			
Rufous-naped Brush-finch <i>Atlapetes rufinucha</i>		5			X	X	X
Chestnut-capped Brush-finch <i>Atlapetes brunneinucha</i>		18,G	X	R	X		X
Stripe-headed Brush-finch <i>Buarremon torquatus</i>		5				X	X
Bananaquit <i>Coereba flaveola</i>		18,24*	X	X			X
Chestnut-vented Conebill <i>Conirostrum speciosum</i>			R				X
Capped Conebill <i>Conirostrum albigrons</i>		5,G,W			X	X	X
Black-faced Tanager <i>Schistochlamys melanopis</i>			R				X
Maggie Tanager <i>Cissopis leveriana</i>		W	X	X			X
Grass-green Tanager <i>Chlorornis riefferii</i>		5,W				X	X
White-capped Tanager <i>Sericossypha albocristata</i>		5,24,G			X	X	X
Common Bush-tanager <i>Chlorospingus ophthalmicus</i>		5,G			X	X	X
Short-billed Bush-tanager <i>Chlorospingus parvirostris</i>		24*,W			R	R	X
Yellow-throated Bush-tanager <i>Chlorospingus flavigularis</i>		18,24*,W	X	R			X
Ashy-throated Bush-tanager <i>Chlorospingus canigularis</i>		18,24*	X	R			X
Grey-hooded Bush-tanager <i>Cnemoscopus rubrirostris</i>		5,G,W			X	X	X
Black-capped Hemispingus <i>Hemispingus atropileus</i>		5				X	X
Oleaginous Hemispingus <i>Hemispingus frontalis</i>		W			X		X
Black-eared Hemispingus <i>Hemispingus melanotis</i>						X	X
Drab Hemispingus <i>Hemispingus xanthophthalmus</i>		5				X	X
Yellow-backed Tanager <i>Hemithraupis flavicollis</i>				R			X
Fulvous Shrike-tanager <i>Lanio fulvus</i>		18	X	R			X
Rufous-crested Tanager <i>Creurgops verticalis</i>		18,24*,G	X	X	X	R	X
Yellow-crested Tanager <i>Tachyphonus rufiventer</i>		W		X			X
White-lined Tanager <i>Tachyphonus rufus</i>		24*	X	R			X
Summer Tanager <i>Piranga rubra</i>		5,24	X	X	X	X	X
Scarlet Tanager <i>Piranga olivacea</i>	Nm	24	X	X			X
White-winged Tanager <i>Piranga leucoptera</i>		18,W	X	X			X
Red-hooded Tanager <i>Piranga rubriceps</i>		24				X	X
Vermilion Tanager <i>Calochaetes coccineus</i>		18,G,W	X	X	X		X
Huallaga Tanager <i>Ramphocelus melanogaster</i>	RR	24,W	X	X			X
Blue-grey Tanager <i>Thraupis episcopus</i>		18,W	X	X			X
Palm Tanager <i>Thraupis palmarum</i>		18,W	X	X			X
Blue-capped Tanager <i>Thraupis cyanocephala</i>		5, 18,W	X	X	X	X	X



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8

Figure 1. Royal Sunangel *Heliangelus regalis* (Jon Hornbuckle)

Figure 2. Napo Sabrewing *Campylopterus villaviscensio* (Jon Hornbuckle)

Figures 3 & 4. Ochre-fronted Antpitta *Grallaricula ochraceifrons* (Jon Hornbuckle)

Figure 5. Chestnut Antpitta *Grallaria blakei* (Jon Hornbuckle)

Figure 6. Cinnamon-breasted Tody-tyrant *Hemitriccus cinnamomeipectus* (Jon Hornbuckle)

Figure 7. Undescribed *Poecilotriccus* (Jon Hornbuckle)

Figure 8. Female Black-and-white Tody-tyrant *Poecilotriccus capitalis* (Jon Hornbuckle)

Figure 9. Bar-winged Wood-wren *Henicorhina leucoptera* (Jon Hornbuckle)



9

Hooded Mountain-tanager <i>Buthraupis montana</i>	5,W					X	X
Lacrimose Mountain-tanager <i>Anisognathus lacrymosus</i>	5					R	
Scarlet-bellied Mountain-tanager <i>Anisognathus igniventris</i>						X	X
Blue-winged Mountain-tanager <i>Anisognathus somptuosus</i>	G,W			X			X
Yellow-throated Tanager <i>Iridosornis analis</i>	24*,G,W	R		X		X	X
Yellow-scarfed Tanager <i>Iridosornis reinhardtii</i>	RR	5				X	X
Fawn-breasted Tanager <i>Pipraeidea melanonota</i>	G,W				R		
Bronze-green Euphonia <i>Euphonia mesochrysa</i>	18,G	X	X	X			X
Thick-billed Euphonia <i>Euphonia laniirostris</i>	W	X					X
Orange-bellied Euphonia <i>Euphonia xanthogaster</i>	18,G	X	X	X			X
Blue-naped Chlorophonia <i>Chlorophonia cyanea</i>	18,G	X	X	X			X
Chestnut-breasted Chlorophonia <i>Chlorophonia pyrrhophrys</i>	24					R	
Orange-eared Tanager <i>Chlorochrysa calliparaea</i>	18,G,W	X	X	X			X
Paradise Tanager <i>Tangara chilensis</i>	18,W	X	X				X
Green-and-gold Tanager <i>Tangara schrankii</i>	18,W	X	X				X
Golden Tanager <i>Tangara arthus</i>	18,G,W	X	X				X
Saffron-crowned Tanager <i>Tangara xanthocephala</i>	5,18,G,W	X	X	X		X	X
Golden-eared Tanager <i>Tangara chrysotis</i>	18,24*	X	R				X
Flame-faced Tanager <i>Tangara parzudakii</i>	5,18,24,G,W	X	X	X		X	X
Yellow-bellied tanager <i>Tangara xanthogastra</i>	24*	R	R				X
Spotted Tanager <i>Tangara punctata</i>	18,24*,W	X	X				X
Bay-headed Tanager <i>Tangara gyrola</i>	18,W	X					X
Burnished-buff Tanager <i>Tangara cayana</i>	24	R					X
Golden-naped Tanager <i>Tangara ruficervix</i>					R	X	X
Metallic-green Tanager <i>Tangara labradorides</i>	G,W			X			X
Blue-browed Tanager <i>Tangara cyanotis</i>	18,24*,W	X	R	R			X
Blue-necked Tanager <i>Tangara cyanicollis</i>	18,W	X	X				X
Beryl-spangled Tanager <i>Tangara nigroviridis</i>	5,G,W		X			X	X
Blue-and-black Tanager <i>Tangara vassorii</i>	5,G,W			X		X	X
Silver-backed Tanager <i>Tangara viridicollis</i>	5,G,W			X		X	X
Golden-collared Honeycreeper <i>Iridophanes pulcherrima</i>	18,24*,W	R	R	R			
Black-faced Dacnis <i>Dacnis lineata</i>	18,24*	X	R				X
Blue Dacnis <i>Dacnis cayana</i>	18	X					X
Purple Honeycreeper <i>Cyanerpes caeruleus</i>		X					X
Swallow-Tanager <i>Tersina viridis</i>		X					X
Plush-capped Finch <i>Catamblyrhynchus diadema</i>	5					R	X
Slaty Finch <i>Haplospiza rustica</i>	24,G			R	X		X
Yellow-bellied Seedeater <i>Sporophila nigricollis</i>	24*	X					X
Chestnut-bellied Seedeater <i>Sporophila castaneiventris</i>	18	X					
Lesser Seedfinch <i>Oryzoborus angolensis</i>	24*	X					X
Rusty Flowerpiercer <i>Diglossopis sittoides</i>	5					X	
Deep-blue Flowerpiercer <i>Diglossopis glauca</i>	18,24*,G,W			X	X	R	X
Bluish Flowerpiercer <i>Diglossopis caeruleascens</i>	24*				X	R	X
White-sided Flowerpiercer <i>Diglossa albilatera</i>	5,W				X	X	X
Masked Flowerpiercer <i>Diglossa cyanea</i>	5,24*,G,W				R	X	
Golden-bellied Grosbeak <i>Pheucticus chrysogaster</i>		X	X				X
Slate-coloured Grosbeak <i>Pitylus grossus</i>	18	R					
Buff-throated Saltator <i>Saltator maximus</i>	18,24*,W	X	X				X
Greyish Saltator <i>Saltator coerulescens</i>	24*	X					X
Crested Oropendola <i>Psarocolius decumanus</i>	W	X					X
Russet-backed Oropendola <i>Psarocolius angustifrons</i>	W	X	X				X
Yellow-rumped Caciue <i>Cacique cela</i>		X					X
Scarlet-rumped Caciue <i>Cacicus uropygialis</i>	G,W		X	X			X
Mountain Caciue <i>Cacicus chrysonotus</i>						X	X
Yellow-billed Caciue <i>Amblycercus holosericeus</i>	5					X	X
Moriche Oriole <i>Icterus chrosocephalus</i>	24*	X					X
Giant Cowbird <i>Scaphidura oryzivora</i>	24,W	X			X		X

Number of species

420 [424]

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Appendix 2. Birds trapped at Abra Patricia 9–27 November 1998.

Mean elevation	2250m	1900m	1350m	1050m	TOTAL	Retraps
Yungas (Andean) Pygmy-owl <i>Glaucidium bolivianum</i>	1				1	
Green Hermit <i>Phaethornis guy</i>			1	1	2	
Tawny-bellied Hermit <i>Phaethornis symrnatophorus</i>		2			2	
White-tipped Sicklebill <i>Eutoxeres aquila</i>			2		2	
Buff-tailed Sicklebill <i>Eutoxeres condamini</i>				1	1	
Green Violetear <i>Colibri thalassinus</i>		1			1	
Speckled Hummingbird <i>Adelomyia melanogenys</i>	5	7			12	
Ecuadorian Piedtail <i>Phlogophilus hemileucurus</i>				1	1	
Fawn-breasted Brilliant <i>Heliodoxa rubinoides</i>		2			2	
Napo Sabrewing <i>Campylopterus villaviciencio</i>				1	1	
Bronzy Inca <i>Coeligena coeligena</i>		4			4	
Collared Inca <i>Coeligena torquata</i>	1				1	
Amethyst-throated Sunangel <i>Heliangelus amethysticollis</i>		2			2	
Royal Sunangel <i>Heliangelus regalis</i>		2			2	1
Emerald-bellied Puffleg <i>Eriocnemis alinae</i>	1				1	
Greenish Puffleg <i>Haplophaedia aureliae</i>		10			10	2
Booted Racket-tail <i>Ocreatus underwoodii</i>			1		1	
Rufous-capped Thornbill <i>Chalcostigma ruficeps</i>			1		1	
Long-tailed Sylph <i>Agelaiocercus kingi</i>			1		1	
Wedge-billed Hummingbird <i>Schistes geoffroyi</i>			1		1	
Crested Quetzal <i>Pharomachrus antisianus</i>			1		1	
Emerald Toucanet <i>Aulacorhynchus prasinus</i>			1		1	
Smoky-brown Woodpecker <i>Veniliornis fumigatus</i>		2			2	
Little Woodpecker <i>Veniliornis passerinus</i>				2	2	
Crimson-mantled Woodpecker <i>Piculus rivolii</i>		1			1	
Tyrannine Woodcreeper <i>Dendrocincla tyrannina</i>			1		1	
Olivaceous Woodcreeper <i>Sittosomus griseicapillus</i>			1		1	
Wedge-billed Woodcreeper <i>Glyphorhynchus spirurus</i>				3	3	
Olive-backed Woodcreeper <i>Xiphorhynchus triangularis</i>	1	1			2	
Azara's Spinetail <i>Synallaxis azarae</i>				1	1	
Dark-breasted Spinetail <i>Synallaxis albicularis</i>				3	3	
Rufous Spinetail <i>Synallaxis unirufa</i>	3				3	
Rusty-winged Barbtail <i>Premnornis guttuligera</i>		4			4	
Spotted Barbtail <i>Premnornis brunnescens</i>	1	5	2		8	
Pearled Treerunner <i>Margarornis squamiger</i>	2				2	
Streaked Tuftedcheek <i>Pseudocolaptes boissonneautii</i>		2			2	
Black-billed Treehunter <i>Thripadectes melanirhynchus</i>			3		3	
Plain Xenops <i>Xenops minutus</i>			2		2	
Variable Antshrike <i>Thamnophilus caerulescens</i>	1				1	
Plain Antvireo <i>Dysithamnus mentalis</i>			6		6	
Slaty Antwren <i>Myrmotherula schisticolor</i>			2		2	
Long-tailed Antbird <i>Drymophila caudata</i>	1				1	
White-plumed Antbird <i>Pithys albifrons</i>			1		1	
Chestnut Antpitta <i>Grallaria blakei</i>	1				1	
Ochre-fronted Antpitta <i>Grallaricula ochraceifrons</i>		1			1	
Chestnut-crowned Gnatcatcher <i>Conopophaga castaneiceps</i>			1		1	
Rufous-vented Tapaculo <i>Scytalopus femoralis</i>	1	1			2	
Green-and-black Fruiteater <i>Pipreola riefferii</i>		10			10	3
Andean Cock-of-the-Rock <i>Rupicola peruviana</i>				1	1	
Jet Manakin <i>Chloropipo unicolor</i>		2			2	
Wing-barred Piprites <i>Piprites chloris</i>		1			1	
Streak-necked Flycatcher <i>Mionectes striaticollis</i>	4	27			31	5
Olive-striped Flycatcher <i>Mionectes olivaceus</i>			6		6	
Inca Flycatcher <i>Leptopogon taczanowskii</i>	1				1	
Rufous-headed Pygmy-tyrant <i>Pseudotriccus ruficeps</i>	6	1			7	
Undescribed Tody-tyrant <i>Poecilatriccus</i> sp.		4			4	
Black-and-white Tody-tyrant <i>Poecilatriccus capitalis</i>			1		1	
Cinnamon-breasted Tody-tyrant <i>Hemitriccus cinnamomeipectus</i>		1			1	
Golden-faced Tyrannulet <i>Zimmerius chrysops</i>		5	2		7	
Sulphur-bellied Tyrannulet <i>Mecocerculus minor</i>		4			4	2
Fulvous-breasted Flatbill <i>Rhynchocyclus fulvipectus</i>		1			1	
White-throated Spadebill <i>Platyrinchus mystaceus</i>			1		1	
Olive-chested Flycatcher <i>Myiophobus cryptoxanthus</i>				2	2	
Cinnamon Flycatcher <i>Pyrrhomyias cinnamomea</i>		1			1	
Cliff Flycatcher <i>Hirundinea ferruginea</i>		2			2	
Alder Flycatcher <i>Empidonax noronum</i>				3	3	
Golden-browed Chat-tyrant <i>Silvilatrix pulchella</i>	1				1	
Andean Tyrant <i>Knipolegus signatus</i>		1			1	
Rufous-tailed Tyrant <i>Knipolegus poecilurus</i>		1			1	
Long-tailed Tyrant <i>Colonia colonus</i>				1	1	
Chestnut-crowned Becard <i>Pachyrhamphus castaneus</i>				1	1	

Green Jay <i>Cyanocorax yncas</i>					1	
Rufous-browed Peppershrike <i>Cyclarhis gujanensis</i>					1	
Andean Solitaire <i>Myadestes ralloides</i>		11				11
White-eared Solitaire <i>Entomolestes leucotis</i>		2				2
Slaty-backed Nightingale-thrush <i>Catharus fuscater</i>		1				1
Swainson's Thrush <i>Catharus ustulatus</i>			7			7
Great Thrush <i>Turdus fuscater</i>		1	1			2
Glossy-black Thrush <i>Turdus serranus</i>		1	3			4
Black-billed Thrush <i>Turdus ignobilis</i>				1		1
Andean Slaty-thrush <i>Turdus nigriceps</i>				1		1
Sharpe's Wren <i>Cinnycerthia olivascens</i>		3				3
House Wren <i>Troglodytes aedon</i>		1		1		2
Grey-breasted Wood-wren <i>Henicorhina leucophrys</i>		5	3	2		10
Bar-winged Wood-wren <i>Henicorhina leucoptera</i>			3			3
Chestnut-breasted Wren <i>Cyphorhinus thoracicus</i>		2				2
Blue-and-white Swallow <i>Notiochelidon cyanoleuca</i>		2				2
Slate-throated Redstart <i>Myioborus miniatus</i>				1		1
Spectacled Redstart <i>Myioborus melanocephalus</i>		1				1
Citrine Warbler <i>Basileuterus luteoviridis</i>		2				2
Russet-crowned Warbler <i>Basileuterus coronatus</i>		1	9			10
Three-striped Warbler <i>Basileuterus tristriatus</i>			7	3		10
Stripe-headed Brush-finch <i>Atlapetes torquatus</i>		1				1
Capped Conebill <i>Conirostrum albigrons</i>			3			3
Grass-green Tanager <i>Chlorornis riefferii</i>		1				1
Common Bush-tanager <i>Chlorospingus ophthalmicus</i>			7			7
Black-capped Hemispingus <i>Hemispingus atropileus</i>		2				2
Oleaginous Hemispingus <i>Hemispingus frontalis</i>			3			3
Huallaga Tanager <i>Ramphocelus melanogaster</i>					8	8
Blue-capped Tanager <i>Thraupis cyanocephala</i>			1			1
Blue-winged Mountain-tanager <i>Anisognathus somptuosus</i>			1			1
Yellow-throated Tanager <i>Idiosornis analis</i>			9			9
Bronze-green Euphonia <i>Euphonia mesochrysa</i>				1		1
Orange-bellied Euphonia <i>Euphonia xanthogaster</i>			2	2		4
Saffron-crowned Tanager <i>Tangara xanthocephala</i>			2			2
Flame-faced Tanager <i>Tangara parzudakii</i>			6			6
Metallic-green Tanager <i>Tangara labradorides</i>			2			2
Beryl-spangled Tanager <i>Tangara nigroviridis</i>			5			5
Silver-backed Tanager <i>Tangara viridicollis</i>			1			1
Slaty Finch <i>Haplospiza rustica</i>			1			1
Bluish Flowerpiercer <i>Diglossopsis caeruleascens</i>			5			5
White-sided Flowerpiercer <i>Diglossa albilatera</i>		1	2			3
Deep-blue Flowerpiercer <i>Diglossopsis glauca</i>			1			1
Yellow-billed Caciue <i>Amblycercus holosericeus</i>		1				1
TOTAL	50	213	49	31		343
Number of species	27	67	22	16		114
Number of days at site	4	10	4	2		20

Appendix 3. Logistics

It is possible to reach the area from either the east or west. The easiest is to fly to Tarapoto (2–3 flights a day from Lima), from where it is a few hours drive to the forest, somewhat longer by public transport. There are a few flights a week to Moyabamba and Rioja, closer still. From the west, the starting point is Chiclayo, which can be reached by air or bus from Lima, or bus from the Ecuadorian border. Several buses a day go to Moyabamba but it takes 12–15 hours to reach Abra Patricia pass. There is even one bus a day to the area to and from Lima, a long but cheap ride.

The nearest hotels are in Pomacocha de Florida and Moyabamba, both c.2 hours away. There are 5–6 restaurants by the road near the forest, which all provide cheap food; some have rooms available and it may be possible to rent rooms in Aguas Verdes, but living conditions are very basic.

Although the danger from terrorists is considered to be minimal now, there was a report of an attack on police and soldiers in Rioja on 3 July 1998 and of birders' camping equipment being stolen near Abra Patricia in 1998. Based at the restaurants, we experienced no security problems.

Appendix 4. Coordinates of localities

The following GPS readings of localities in the text were measured by RAR and REW.

Abra Patricia	05°41'93"S	77°48'73"W
Garcia	05°40'03"S	77°46'25"W
Puente Afluyente	05°40'58"S	77°40'50"W