

New records of birds from the northern Cordillera Central of Peru in a historical perspective

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Se presentan los resultados de inventarios de aves realizados cerca a Leimebamba, Dept. Amazonas, en el norte de la Cordillera Central del Perú. El trabajo de campo reveló ampliaciones en los rangos de distribución para varias especies, siendo más importante el hallazgo de una nueva localidad para el Tucancillo Cejamarillo *Aulacorhynchus huallagae*. Se presenta también una vocalización no descrita hasta la fecha para el Tororoi Piquipáldo *Grallaria carrikeri*. Finalmente, se discuten los aparentes vacíos en el conocimiento sobre la distribución de aves dentro de esta región, considerada bien explorada del Perú, en un contexto histórico y se mencionan las posibilidades para futuras investigaciones.

Despite 150 years of ornithological exploration the northern Cordillera Central of Peru still holds potential for discovery. New trails and roads in once inaccessible terrain provide fresh opportunity to contribute to our knowledge of avian distribution in this fascinating area. We discuss the results of avian inventories undertaken near Leimebamba, dpto. Amazonas, and place these into a historical perspective. The paper is organised thus: the biogeography of the northern Cordillera Central is discussed first, then the achievements of earlier explorers of the region. Thereafter, the results of our investigations of the Leimebamba area in 2000, 2002 and 2003 are presented, followed by a discussion and conclusions.

Geography of the northern Cordillera Central of Peru

The Cordillera Central of the Peruvian Andes is situated between the drainages of the upper río Marañón and the río Huallaga. It extends c.600 km from the Nudo de Pasco, dpto. Pasco (10°30'S 76°30'W), a broad altiplano north of Lake Junín, to the Pongo de Rentema, dpto. Amazonas (05°29'S 78°31'W). Peaks in the northern Cordillera Central are comparatively low from a Peruvian perspective (rarely reaching 4,000 m), but the main crest lies continuously above 3,000 m. The northernmost significant pass, Abra Barro Negro (06°44'S 77°54'W), at the divide between the Utcubamba and Marañón watersheds, reaches 3,675 m, north of which only a restricted area of high-elevation terrain (<550 km² above 3,000 m) continues.

Further north-east, a low divide (<2,200 m) between the río Sonche (part of the Utcubamba/Marañón drainage) and the río Huambo (part of the Huallabamba/Huallaga drainage) isolates the Cordillera Pishcohuauña to the north-east. Another low divide (<2,200 m) between the Utcubamba and Chiriaco watersheds separates the Cordillera de Colán (see Fig. 1). Perhaps the ornithologically best-known segment

of the northern Cordillera Central lies at its extreme southern end in dpto. Huánuco, the Cordillera Carpish, which juts east pushing the flow of the río Huallaga into a 90°-arc known as the 'Huallaga Bend'. Due to the biogeographical similarities between the northern Cordillera Central, the Cordillera Pishcohuauña, the Cordillera de Colán and the Cordillera Carpish, the entire region can be treated as a single entity. Geographers also recognise a 'southern' Cordillera Central, which extends from south of the 'Huallaga Bend' through dptos. Pasco and Junin and which is not discussed here.

Endemism and biogeography

The northern Cordillera Central as defined above harbours numerous endemic taxa. Nevertheless, in terms of the Endemic Bird Area (EBA) concept³⁹ it is a 'composite' of several EBAs: EBA044 Ecuador–Peru East Andes, EBA046 Southern Central Andes, EBA047 Andean ridge-top forests, EBA048 Marañón Valley and EBA049 North-east Peruvian cordilleras.

Salient ecological barriers in the area include the North Peruvian Low created by the dry upper Marañón Valley, whose effect on avian distribution has been described earlier^{17,28}. The 'Huallaga Bend' creates similar xeric conditions at the southern end of the Cordillera Central. To the east, remnants of an ancient grassland ring that once surrounded the Amazon Basin cover the lowest elevations of the Mayo and Huallaga valleys just before their confluence near the Pongo de Aguirre (06°37'S 76°11'W). Finally, to the west the rainshadow of the main crest of the cordillera parallels the north-flowing río Marañón and creates xeric conditions at all elevations.

Seven of the ten avifaunal life zones defined for Peru²⁷ occur in the northern Cordillera Central. The Arid Tropical Zone (400–1,500 m) defines the north-western edge of the cordillera, from the Pongo de Rentema (c.400 m) to the town of Chagual, dpto. La

Libertad (07°50'S 77°38'W; 1,200 m), as well as lower parts of the Utcubamba Valley upstream to Pedro Ruiz, dpto. Amazonas (05°56'S 77°09'W; 1,400 m). Birds characteristic of this zone include many Tumbesian species (often endemic species-pairs and/or endemic subspecies) such as Pacific Parrotlet *Forpus coelestis*, Peruvian Screech Owl *Megascops r. roboratus*, Scrub Nightjar *Caprimulgus anthonyi*, Scarlet-backed Woodpecker *Veniliornis callonotus major*, Necklaced Spinetail *Synallaxis stictothorax chinchipensis*, Collared Antshrike *Sakesphorus bernardi shumbae*, Short-tailed Field Tyrant *Muscigralla brevicauda*, Yellow-tailed Oriole *Icterus mesomelas taczanowskii* and Black-capped Sparrow *Arremonas abeillei nigriceps*. Others are characteristic of savannas to the east, e.g. Tataupa Tinamou *Crypturellus tataupa inops*, Marañón Spinetail *Synallaxis maranonica*, Rufous-fronted Thornbird *Phacellodomus rufifrons peruvianus*, Northern Slaty Antshrike *Thamnophilus punctatus leucogaster*, Pileated Finch *Coryphospingus cucullatus fargoii* and Black-faced Tanager *Schistochlamys melanopsis grisea*. A few typically humid-tropical species occur in small numbers, e.g. Blue-necked Tanager *Tangara cyanicollis* at Chagual, dpto. La Libertad (TM & LA unpubl., December 1997).

Within the Cordillera Central, the Arid Subtropical Zone (1,500–2,500 m) consists of a 2-km strip that follows the río Marañón from above Balsas (06°50'S 78°01'W) upstream c.300 km to Jircan, dpto. Huánuco (09°15'S 76°44'W), as well as a similar strip in the Utcubamba Valley, from Pedro Ruiz to Leimebamba, dpto. Amazonas (06°41'S 77°47'W; 2,200 m). In the upper Huallaga Valley, near Huánuco, dpto. Huánuco (09°55'S 76°14'E; 1,900 m), the zone is wider but still transitional in character. It differs there in forming a transition from the Humid Tropical Zone.

The highest, southern, parts of the Marañón and Huallaga valleys, including the hydrographical divide, are encompassed by the Arid Temperate Zone (2,500–4,000 m). This zone effectively marks the termination of the northern extension of the Puna Zone of highland Peru, and the entire genus *Geositta* as well as the majority of species in genera such as *Nothoprocta*, *Leptasthenura*, *Asthenes* and *Anthus* which have no presence in the Cordillera Central. Most species are continuously distributed within this zone; however several of those found on the east slope of the Cordillera Occidental including the endemic Purple-backed Sunangel *Aglaeactis aliciae* and Unicoloured Tapaculo *Scytalopus unicolor*, as well as widespread species such as Slender-billed Miner *Geositta tenuirostris*, White-winged Cinclodes *Cinclodes atacamensis*, Andean Tit-Spinetail *Leptasthenura andicola*, Bright-rumped Yellow Finch *Sicalis uropygialis* and

Thick-billed Siskin *Carduelis crassirostris*, appear to be absent from the Cordillera Central, suggesting that the river and/or perhaps xeric conditions near its headwaters function(s) as isolating factor(s). Nevertheless, many other species do reach the right bank, e.g. Rusty-crowned Tit-Spinetail *Leptasthenura pileata*, Baron's Spinetail *Cranioleuca baroni*, Many-striped Canastero *Asthenes flammulata*, Black-crested Tit-Tyrant *Anairetes nigrocristatus*, Yellow-billed Tit-Tyrant *A. flavirostris*, White-browed Chat-Tyrant *Ochthoeca leucophrys*, Jelski's Chat-Tyrant *O. jelskii*, Chiguanco Thrush *Turdus chiguanco*, Rusty Flowerpiercer *Diglossa sittoides*, Band-tailed Seedeater *Catamenia analis*, Plumbeous Sierra Finch *Phrygilus unicolor*, Ash-breasted Sierra Finch *P. plebejus*, Baron's Rufous-naped Brush Finch *Atlapetes rufinucha baroni* and Rufous-backed Inca Finch *Incapiza personata*.

Finally, there is a strong correlation between Arid Temperate Zone birds associated with *Polylepis/Gynoxys* woodlands of the Cordillera Blanca and those inhabiting a similar habitat amid grassland in the Cordillera Central. These include Green-throated Hillstar *Oreotrochilus stolzmanni*, Rufous-webbed Tyrant *Polioptila rufipennis*, Tit-like Dacnis *Xenodacnis parina*, Plain-tailed Warbling Finch *Poospiza alticola* and Rufous-eared Brush Finch *Atlapetes rufigenis*.

Due to the wet conditions in the highest parts of the Cordillera Central, elfin forest and *jalca*, a humid grass-shrub association, dominate the Humid Temperate Zone (2,500–4,000 m) above 3,000 m. These habitats harbour several endemic and near-endemic species, such as Coppery Metaltail *Metallura theresiae*, Russet-mantled Softtail *Thripophaga berlepschi*, Neblina Tapaculo *Scytalopus altirostris*, Tschudi's Tapaculo *S. acutirostris*, Bay-vented Cotinga *Ampelion sclateri*, Pardusco *Nephelornis oneilli* and Golden-backed Mountain Tanager *Buthraupis aureodorsalis*. Below 3,000 m, forest mixed with large patches of *Chusquea* covers the east-facing slopes. A high level of endemism is found amongst the forest- and *jalca*-based species of this zone. This life zone occurs the entire length of the Cordillera Central.

The Humid Subtropical Zone (1,500–2,500 m) extends the length of the east slope of the Cordillera Central; however, it 'wraps' around the northern end, facilitated by clouds that enter the widest part of the Marañón Valley. Typically, the habitat of this zone is humid-montane forest. However, near the dry valleys of the Utcubamba and Marañón, forest edge and second growth are prevalent and harbour an endemic species, Marvellous Spatuletail *Loddigesia mirabilis* and, similarly in the Huallaga, the endemic Brown-flanked Tanager *Thlypopsis pectoralis*. Within the Marañón Valley, there is a transition to the Arid

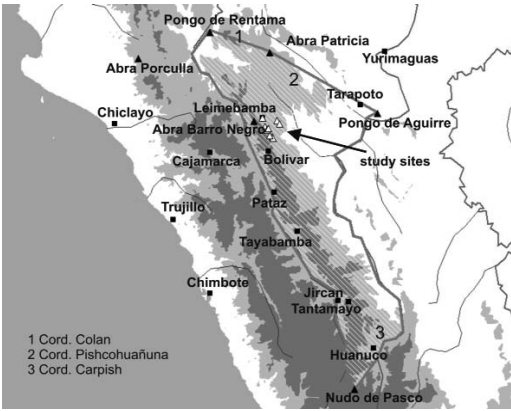


Figure 1. The northern Cordillera Central of Peru. Some locations mentioned in the text are indicated as well as the study sites (white triangles).



Figure 3. Laguna de los Cóndores from the trail to Quintecocha; the colony of Black-crowned Night Herons *Nycticorax nycticorax* is located below the cliff visible on the right-hand side of the lake (Jeremy Flanagan)

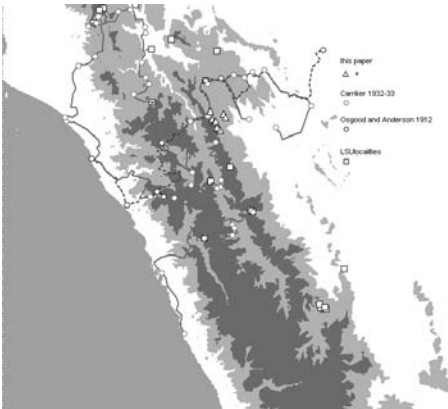


Figure 2a. Map of the Cordillera Central indicating post-1900 collecting locations.



Figure 4. The *jalca* of La Muralla, with Cerro Pagrapagra in the background; a band of (disturbed) elfin forest is visible (Jeremy Flanagan)

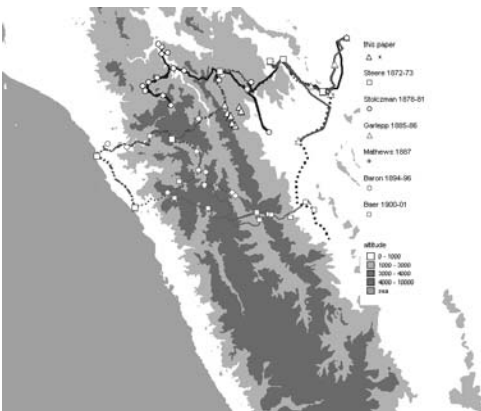


Figure 2b. Map of the Cordillera Central indicating pre-1900 collecting locations.



Figure 5. Pond amid *jalca* between Teabem and Pasabreve; habitat of Puna Teal *Anas puna* (Todd Mark)

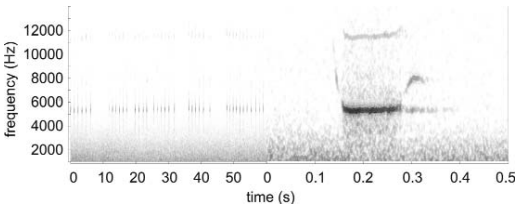


Figure 6. Left: sonogram of vocalisation of Pale-billed Antpitta *Grallaria carrikeri* in response to imitated whistles of Rusty-tinged Antpitta *G. przewalskii*. Right: sonogram of presumed song of *G. carrikeri*. During our field work similar songs (sometimes with many more notes following the initial one) were heard daily.

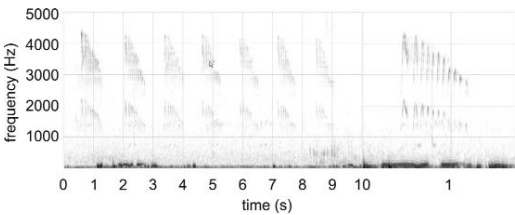


Figure 8. Vocalisations of presumed Tschudi's Tapaculo *Scytalopus acutirostris*, recorded in elfin forest just below Cerro Atalaya.



Figure 7. Rufous Antpitta *Grallaria rufula obscura*, mist-netted just above Ullilén (Jeremy Flanagan)



Figure 9. Yellow-browed Toucanet *Aulacorhynchus huallagae*, Orfedón, on the trail to La Morada, showing characteristic white base to bill, yellow brow and yellow vent; note piece of string used by locals to tie the bird to a door (Todd Mark)



Figure 10. Habitat of Yellow-browed Toucanet *Aulacorhynchus huallagae*, near Orfedón, Huabayacu drainage (Todd Mark)

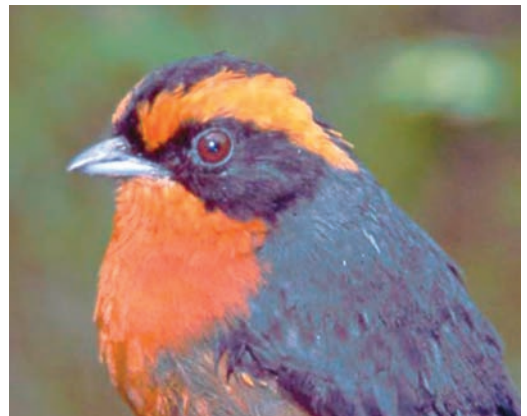


Figure 11. Rufous-browed Hemispingus *Hemispingus rufosuperciliata* mist-netted just above Ullilén (Jeremy Flanagan)

Tropical Zone around 1,200 m; elsewhere there is a transition to the Humid Upper Tropical Zone (900–1,500 m), a more or less continuous belt of humid-montane forest, which also extends the length of the cordillera. The latter two zones continue unbroken from the Cordillera Central through the Pishcohuauña to lower-lying parts of the Cordillera Oriental; northward they resume across the narrow canyon of the río Marañón at the Pongo de Rentema into the Cordillera del Cóndor.

To the east, the low valleys of the Mayo and Huallaga mark the end of the Humid Tropical Zone (>900 m). These two valleys are typical of many rainshadow inter-Andean valleys in Peru, with a relict savanna and desert-scrub habitat. Their more extensive nature, however, has permitted a greater diversity of species. The Peruvian ranges of several species are (almost) restricted to these valleys, e.g., Chestnut-throated Spinetail *Synallaxis cherriei* (also at hacienda Luisiana, dpto. Ayacucho, and the lower Urubamba, dpto. Cuzco), Rusty-backed Antwren *Formicivora rufa* (also dpto. Cuzco), Ashy-headed Greenlet *Hylophilus pectoralis* and Burnished-buff Tanager *Tangara cayana* (also Pampas del Heath, dpto. Madre de Dios). Several endemic subspecies occupy these valleys as well, e.g. Northern Slaty Antshrike *Thamnophilus punctata huallagae*, White-browed Antbird *Myrmoborus leucophrys koenigorum*, Paradise Tanager *Tangara chilensis chlorocorys* and Black-bellied Tanager *Ramphocelus melanogaster*.

Finally, the Humid Tropical Zone also occupies a 110-km-stretch of humid *terra firme* forest from the Pongo de Rentema to Santa María de Nieva, dpto. Amazonas (04°50'S 77°30'W), and features a typical Amazonian avifauna and Orange-throated Tanager *Wetmorethraupis sterrhopteron*, a species endemic to the valleys isolated by the *pongos* (cataracts) of north-central Peru.

Barriers such as the 'Huallaga Bend' have limited the distribution of some temperate species (e.g. Golden-backed Mountain Tanager *Buthraupis aureodorsalis* and Rufous-browed Hemispingus *Hemispingus rufosuperciliaris*) to the Cordillera Central proper, but not others (e.g. Tschudi's Tapaculo *Scytalopus acutirostris* and Pardusco *Nephelornis oneilli*) whose ranges extend farther south.

Similar distributional 'barriers' affect humid subtropical and upper-tropical species. For example, the Pongo de Rentema marks the southernmost limit of many species (e.g. Spectacled Prickletail *Siptornis striaticollis*, White-streaked Antwren *Dysithamnus leucostictus*) or represents the 'turnover' point for some species-pairs (e.g. Red-headed Barbet *Eubucco bourcierii* / Versicoloured Barbet *E. versicolor*). In other cases, it is ineffective as a barrier (e.g. Brown-billed Scythebill *Campylorhamphus pusillus*, Lined Antshrike

Thamnophilus tenuipunctatus, Olive-crested Flycatcher *Myiophobus cryptoxanthus*, Olive Tufted Flycatcher *Mitrephanes olivaceus* and Straw-backed Tanager *Tangara argyrofenges*).

Despite the apparent discreteness of biogeographic and ecological boundaries, other 'hidden' barriers limiting the southern distribution of many Andean species and northern distribution of others occur within the Cordillera Central.

Ornithological exploration

The first specimens from the northern Cordillera Central represented opportunistic collecting with a bias towards hummingbirds and colourful species. Prior to 1880, when such mood prevailed, several naturalists crossed the Cordillera Pishcohuauña between Rioja and Chachapoyas. In April 1834, the English horticulturist Andrew Mathews reached Chachapoyas via the río Huallaga and an overland route that traversed the Cordillera Pishcohuauña. He stayed two months, then returned to Chachapoyas and Moyobamba in June 1839, where he collected (mostly plants) until his untimely death in November 1841⁴⁶. Some of his earlier specimens formed part of the 'Hooker' Collection (Liverpool museum)⁴⁹ from which William Swainson described Fiery-throated Fruiteater *Pipreola chlorolepidota*, Black-bellied Tanager *Ramphocelus melanogaster* and Blue-necked Tanager *Tangara cyanicollis caeruleocephala* in 1838^{41,49}. Marvellous Spatuletail *Loddigesia mirabilis*, the first bird species endemic to the Cordillera Central to be described, was authored by Jules Bourcier in 1847 from Mathews' specimens belonging to the 'Loddiges' Collection (British Museum)^{5,48}. Other type specimens from the 'Loddiges' Collection include Booted Racket-tail *Ocreatus underwoodii peruianus* and Blue-fronted Lancebill *Doryfera johannae*. One, Chestnut-breasted Coronet *Boissonneaua matthewsii* [sic] bears his name. Joseph Beale Steere³⁷ (1842–1940) explored Mathews' route in 1872 and took the first specimen of the northern subspecies of Versicoloured Barbet *Eubucco versicolor steerii*.

The Polish botanist Józef Ritter von Rawicz Warszewicz (1812–66)²⁹ collected the first Purple-throated Sunangel *Heliangelus viola* in Chachapoyas and Violet-fronted Brilliant *Heliodoxa leadbeateri sagitta* on the 'banks of the Marañón'. Nevertheless, Warszewicz's precise route through the region is unknown.

Several 'enigmatic' specimens point to other collecting in this region in the first half of the 19th century. The type of Rufous-crested Coquette *Lophornis delattrei*, erroneously attributed to Colombia when described by Lesson, was evidently collected at Moyobamba and named for its supposed collector Adolphe De Lattre. The type of White-collared Jay *Cyanolyca viridicyana joylaea*

was procured by its describer Bonaparte from natural history specimen dealers (the Verreaux brothers) (TM pers. obs. 2001). Zimmer⁴⁹ showed that this form from 'Peru' is endemic to the Cordillera Central. Philip Lutley Sclater's description of Guira Tanager *Hemithraupis guira guirina* included a specimen from Huánuco (subsequently assigned to *H. g. huambina*), indicating collecting activity in the area prior to the first documented sampling, in 1922, by the Marshall-Field Expedition.

Ornithological exploration of the Cordillera Central intensified in the late 19th century and continued in the early 20th century, spearheaded by collectors such as Jan Sztolcman (1879–81), Oskar Theodor Baron (1894–96), Gustave-Adolphe Baër (1900), Wilfred Hudson Osgood and Malcolm Playfair Anderson (1912), John Todd Zimmer and Edmund Heller (1922–23), Harry Watkins (1925–26) and Melbourne Armstrong Carriker (1930–33), their work producing an additional five endemic species and 15 endemic subspecies, as well as many other widespread species new to science.

Jan Sztolcman (1854–1928)^{42,43} first reached the low dry slopes of the northern Cordillera Central at Huajango (or Hualango)⁴⁰. He collected several forms new to science, such as Spot-throated Hummingbird *Leucippus taczanowski*, Marañón Spinetail *Synallaxis maranonica* and a new race of Northern Slaty Antshrike *Thamnophilus punctata leucogaster*. Following an exploratory foray into the Cordillera Central, leaving Cocochó on the Marañón for Yurimaguas on the Huallaga in September–November 1879, Sztolcman switched his operations from Chota and Cutervo, across the Marañón, where he had spent the previous 2.5 years, to the upper río Huallabamba Basin. No fewer than 15 collecting localities in eight months (February–September 1880)⁴⁹ represent the first in earnest effort to explore the Cordillera Central from an ornithological standpoint. He secured the types for numerous descriptions published by himself or Taczanowski (e.g. Violet-headed Hummingbird *Klais guimeti pallidiventris*, Emerald-bellied Puffleg *Eriocnemis alinae dybowskii*, Greenish Puffleg *Haplophaedia aureliae affinis*, Rufous-vented White-tip *Urostitte benjamini intermedia*, Strong-billed Woodcreeper *Xiphocolaptes promeropirhynchus compressirostris*, Lined Antshrike *Thamnophilus tenuipunctatus berlepschi*, Variable Antshrike *Thamnophilus caerulescens subandinus*, Rusty-tinged Antpitta *Grallaria przewalskii*, Bran-coloured Flycatcher *Myiophobus fasciatus saturatus*, Mouse-coloured Flycatcher *Phaeomyias murina wagae*, Inca Flycatcher *Leptopogon taczanowskii*, Blue-and-black Tanager *Tangara vassorii branickii* and Guira Tanager *Hemithraupis guira huambina*).

O. T. Baron (1847–1926)^{2,15} travelled from Cajamarca in June or July 1894 reaching Leimebamba by 17 July. He collected at Levanto and Chachapoyas as well as Sztolcman's sites of Santa Rosa de Huallabamba and Leimebamba, the latter he left (for Cajabamba) no earlier than 27 December 1894 (specimen label Muséum National d'Histoire Naturelle [MNHN]). His collecting at San Pedro, near Leimebamba, apparently occurred later in October 1896, following an extensive circuit of the Cordillera Occidental throughout 1895. Baron's Spinetail *Cranioleuca baroni*, Russet-mantled Softtail *Thripophaga berlepschi*, a new subspecies of Streaked Tuftedcheek *Pseudocolaptes boissonneautii medianus* and a new subspecies of White-sided Flowerpiercer *Diglossa albilatera affinis* were described from his collections.

In May 1900, the French naturalist G. A. Baër (1839–1918)¹⁵ left Hacienda Tulpo, dpto. Ancash, and crossed the Andes and the Marañón to reach the east slope of the Cordillera Central at Hacienda Nuevo Loreto, dpto. San Martín (1,200 m), in June. Following two months of collecting, he returned to Huamachuco, dpto. La Libertad, in the Cordillera Occidental, apparently to prepare for a return to collecting on the wet east slope of the Cordillera Central. By August of the same year, he had collected at Cumpang, Utcubamba and Cueva Seca on the río Mishollo. In September, he descended the valley to Piña and Piquitambo, reaching Puerto Pizana on the Huallaga in October, and then Lopuna and Tocache Nuevo in November. December 1900 collecting dates back at Nuevo Loreto and January 1901 dates at Huaylillas indicate a return to the Cordillera Occidental (TM pers. obs. based on MNHN labels). Coppery Metaltail *Metallura theresiae* was described from one of his specimens taken at Tayabamba.

In January–October 1912, W. H. Osgood (1875–1947)¹⁵ and M. P. Anderson (1879–1919)¹ traversed the trail first travelled by Mathews and Steere, beginning at Balsas on the Marañón in May. Eventually reaching Yurimaguas in August the same year, they visited Leimebamba, Utcubamba, Chachapoyas, Molinopampa, Ventilla, Pucatambo, Rioja, Cerro Ventana and Moyobamba. Amongst the birds described from their specimens were new subspecies of White-chinned Thistletail *Schizoeaca fuliginosa peruviana*, Pearled Treerunner *Margarornis squamigera peruviana*, Páramo Pipit *Anthus bogotensis immaculatus* and Black-faced Tanager *Schistochlamys melanopsis grisea*.

J. T. Zimmer (1889–1957)^{20,47,48} and E. Heller (1875–1939), representing the Marshall-Field Peruvian Expedition, explored the upper Huallaga Valley. Between July 1922 and January 1923, they collected along the left bank of the Huallaga from Tingo María (700 m) to Huánuco Viejo (3,500 m), discovering new subspecies such as Spot-winged

Antbird *Schistocichla leucostigma intensa*, Rufous-browed Peppershrike *Cyclarhis gujanensis saturatus*, Paradise Tanager *Tangara chilensis chlorocorys* and Blue-grey Tanager *Thraupis episcopus caerulea*.

Collecting for the American Museum of Natural History (AMNH), Harry Watkins first reached the Cordillera Central at La Lejía in February 1925. He collected at least as far east as the río Seco, west of Moyobamba, in July 1925 (along the trail followed by Mathews, Steere and Osgood & Anderson), from where he backtracked, collecting at Pósic, the río Negro, Uchco and Bagazán. Several new forms were described from his specimens including *Synallaxis unirufa ochrogaster*, Ruddy Foliage-gleaner *Automolus rubiginosus moderatus*, Zimmer's Antbird *Myrmeciza c. castanea*, Hairy-crested Antbird *Rhegmatorhina melanosticta brunneiceps*¹, Slaty-backed Chat-Tyrant *Ochthoeca cinnamomeiventris angustifasciata*, Yellow-margined Flycatcher *Tolmomyias assimilis clarus*, White-eyed Tody-Tyrant *Hemitriccus zosterops flaviviridis*, White-crowned Manakin *Pipra pipra occulta*, Band-tailed Manakin *Pipra fasciicauda saturata*, Spectacled Redstart *Myioborus melanocephalus malaris*, Golden-naped Tanager *Tangara ruficervix amabilis* and Superciliaried Hemispingus *Hemispingus superciliaris insignis*. By April of the same year he was on the west slope of the western Andes at Chugur. In January–February 1926, he had returned to San Pedro, near Leimebamba, where he collected Rufous-crowned Antpitta *Grallaria ruficapilla interior*, Blackish Tapaculo *Scytalopus latrans intermedius*, Sierran Elaenia *Elaenia pallatangae intensa* and Russet-crowned Warbler *Basileuterus coronatus inaequalis*.

M. A. Carriker (1879–1965) first visited the Cordillera Central in April 1932, at Cumpang and Utcubamba, following Baër's route after crossing the Marañón from the Cordillera Blanca at Quiches, dpto. Ancash. Yellow-browed Toucanet *Aulacorhynchus huallagae* was known solely from the single specimen he collected there until 45 years later, when a Louisiana State University Museum of Zoology (LSUMZ) team procured several specimens³⁵. Thereafter, Carriker made his way to Huamachuco across the Marañón and then returned to the Cordillera Central at Chagual in June 1932, proceeding along the right bank of the Marañón at high elevation from Pataz through Callangate, Cajamarquilla (dpto. La Libertad) and Atuén, finally reaching Leimebamba (dpto. Amazonas), in July. Other collecting localities from Carriker's itinerary include Levanto, Bagazán and the río Jelache. Many new forms were described from this collection^{48,49}: Tawny-bellied Hermit *Phaethornis syrmatorphorus huallagae* (now placed in synonymy with *P. s. columbianus* following

Zimmer), Uniform Antshrike *Thamnophilus unicolor caudatus*, Tawny Antpitta *Grallaria quitensis atuenis*, Rusty-breasted Antpitta *Grallaricula ferruginepectus leymebambae*, Ochre-breasted Antpitta *G. flavirostris similis*, Chestnut-crowned Gnateater *Conopophaga castaneiceps chapmani*, Neblina Tapaculo *Scytalopus altirostris*, Yellow-browed Chat-Tyrant *Ochthoeca pulchella similis*, Yellow-whiskered Bush Tanager *Chlorospingus parvirostris huallagae* and Straw-backed Tanager *Tangara argyrofenges caeruleigularis*. During a subsequent journey, Carriker passed through Lluay, dpto. Amazonas (September 1933) en route to Pucatanbo, Moyobamba, Shapaja and Saposoa (all dpto. San Martín), in November 1933, discovering a new form of Fulvous Shrike-Tanager *Lanio fulvus peruvianus*. His 'new' form of Chestnut-throated Spinetail *Synallaxis cherriei saturata* was considered a synonym of *S. c. napoensis* by Zimmer⁴⁹. However, recent specimens from Ecuador suggest that *saturata* should be maintained for the Peruvian form³².

Late 20th century collecting (mostly by teams from LSUMZ^{11–13,22–26}) has capitalised on new access points provided by highways and colonisation, and has produced a remarkable six additional endemic species and six endemic subspecies: Long-whiskered Owllet *Xenoglaux loweryi*, Coppery Metaltail *Metallura theresiae parkeri*, White-chinned Thistletail *Schizoeaca fuliginosa plengei*, Ochre-fronted Antpitta *Grallaricula ochraceifrons*, Pale-billed Antpitta *Grallaria carrikeri*, two new forms of Unstreaked Tit-Tyrant *Anairetes agraphia plengei* and *A. a. squamigera*, Plain-tailed Wren *Thryothorus euophrys schulenbergi* and Common Bush Tanager *Chlorospingus ophthalmicus hiaticolus*. Three additional forms were described from specimens first collected in the Cordillera Central: Green-and-black Fruiteater *Pipreola riefferii tallmanorum*, Chestnut Antpitta *Grallaria blakei* and Pardusco *Nephelornis oneilli*. Yet another two forms endemic to the upper río Huallaga were recently described (White-browed Antbird *Myrmoborus leucophrys koenigorum* and Band-tailed Sierra Finch *Phrygilus alaudinus bracki*). Finally, several recently described species with extremely limited ranges have subsequently been found in the Cordillera Central, namely Royal Sunangel *Heliangelus regalis*, Cinnamon-breasted Tody-Tyrant *Hemitriccus cinnamomeipectus* and Bar-winged Wood Wren *Henicorhina leucoptera*. Bosque Unchog, Zapatagocha, Huayllaspampa and Paty Tea Plantation in the Cordillera Carpish, dpto. Huanuco; La Peca Nueva and the río Chido in the Cordillera de Colán, dpto. Amazonas; and Abra Patricia and García in the Cordillera Pishcohuañuna, dpto. San Martín, represent some of the collecting sites. P. Hocking and M. Villar also

collected throughout the 1970s in the immediate vicinity of Acomayo, dpto. Huánuco, as well as in the Utcubamba basin, dpto. Amazonas, producing Rufous-browed Hemispingus *Hemispingus rufosuperciliaris* and Golden-backed Mountain Tanager *Buthraupis aureodorsalis*. J. Dorst collected briefly in the lower Utcubamba basin in 1955 (his specimens are held at MNHN). Collecting by N. Johnson *et al.* produced the first Johnson's Tody-Tyrant *Poecilatriccus luluae* at Corosha, dpto. Amazonas in 1970, in the Cordillera Pishcohuañuna.

Fig. 1 reveals that, despite all of this activity, until quite recently the east slope of the 'main' Cordillera Central has been accessed mainly in two places: the trail between Tayabamba (08°17'S 77°18'W) and Ongón, dpto. La Libertad (08°16'S 76°58'W), and the trail between Patatz, dpto. La Libertad (07°44'S 77°37'W) and Gran Pajatén, dpto. San Martín (07°38'S 77°25'W). One species, *Aulacorhynchus huallagae*, was known solely from these two trails, in upper montane forest (2,100–2,600 m). The trail between Tayabamba and Ongón was traversed most frequently: by Baer (1900, specimens American Museum of Natural History [AMNH], MNHN), Carriker (1932, specimens Academy of Natural Sciences Philadelphia [ANSP]), and a LSUMZ team (1979, specimens LSUMZ). It was investigated by two of us (TM & LA) in November–December 1997 for eight days. Exploration of the trail between Patatz and Gran Pajatén has a relatively brief history, being visited by J. Ortiz de la Puente in 1989⁷ (specimens Museo de Historia Natural Javier Prado, Universidad Nacional Mayor de San Marcos [MHNJP]). Another trail, from Patatz to the LSU field site, Puerto del Monte, dpto. San Martín (07°32'S 77°29'W; 3,250 m) was traversed in 1981 (specimens LSUMZ). The trail provides access to the 'high' Cordillera Central, but apparently does not reach lower altitudes on the east slope. During the late 1990s, *colonos*, many escaping the ecologically impoverished areas around Cajamarca and Celendín, dpto. Cajamarca, pioneered several additional trails to the east slope of the Cordillera Central, near the town of Leimebamba, dpto. Amazonas (06°41'S 77°47'W). Until now only one report on the birds found beside these trails has appeared in the literature⁹.

On separate expeditions in 2000, 2002 and 2003 we accessed three of these trails to undertake brief inventories of the avifauna of the northernmost part of the high Cordillera Central and its eastern slope. Here, we report on the results of these inventories. Most of our effort was concentrated at study sites on the east slope of the northernmost 'main' Cordillera Central above 2,600 m (see Figs. 1–2).

Study sites

In June 2000, TM spent seven days between Leimebamba and Orfedón (on the east-slope trail to La Morada). Records included sight records, a specimen obtained from local hunters and sound-recordings (48 minutes). In July 2002, W-PV, JF, LA and TM spent a total 38 man-days between Leimebamba and Laguna de los Cóndores. Records included sightings, mist-net captures (45 individuals of 24 species) and sound-recordings (210 minutes). Recordings were made using Sennheiser ME-6 microphones with Sony TCM-5 tape recorders or Sony MZ-series mini-disc recorders. Some sound-recordings discussed here (xc#) are available online at www.xeno-canto.org. In November 2003 JB visited the area as part of a multidisciplinary team, of which three people were mainly working with birds. They spent 36 man-days at Quintecocha and two man-days at a nearby lake, El Plomo. Furthermore, the team shifted camps to the valley of the río Chilchos where it spent 21 man-days at two locations, albeit biased toward mammal research, and the bird list for these areas is incomplete. Records include sight records, mist-net captures and sound-recordings made with a Sennheiser ME-66 microphone on a Sony MZ-series mini-disc recorder. On this expedition some birds were collected and deposited in MHNJP.

Laguna de los Cóndores (06°50'S 77°42'W; 2,800 m)

The Laguna de los Cóndores (Fig. 3) came to international attention in 1997, when mummies were discovered in recently looted tombs in the limestone cliffs abutting the lake. A well-publicised^{18,45} rescue of the remaining tomb contents followed and a museum was established in Leimebamba in 2000 to house the finds. This led to tourist interest and to improvement of the cattle trail to the remote lake (8–10 hours on foot). On 13 July–19 July 2002, JF and W-PV, and on 14 July–18 July 2002, TM and LA camped at a site near the lake called Ullilén.

The trail to the lake leaves the Inca road connecting Leimebamba to Atuén where it first crosses the río Atuén just south of the museum. It climbs steeply through disturbed wet montane forest to 2,800 m, descends to cross quebrada Toronjil, then ascends to 3,000 m where a gradual transition to *jalca* (wet upper-montane grassland) and pasture occurs at the base of Cerro Pagrapagra (4,100 m). From a pass known as La Muralla, the trail continues across a gently sloping area of *jalca*-covered hills interrupted by small sinks and parallel rows of eroded rock, to the base of a 3,500 m-ridge, known locally as Cerro Atalaya. In a series of switchbacks, it traverses this ridge (roughly perpendicular to Cerro Pagrapagra) through an alternating landscape of *jalca* and elfin

forest. As the trail enters the glacially carved valley of the río Lajasbamba (or río Siogue), it exposes in places a salmon-coloured bedrock for several km until reaching the river. For the next 3 km the trail continues on the valley floor between steep cloud-forested slopes overlooked by towering limestone cliffs.

At Ullilén (06°50'S 77°42'W; 2,800 m), a large pasture along a lateral moraine separating the lake and river, the trail ends at a small ranch. A path continuing to the confluence of the river and the outlet stream from the lake passes the foundations of over 130 circular structures of the Chachapoyan site of Llaqtacocha⁴⁵ and ends after 2 km, at 2,600 m. Our attempt to reach lower elevations was eventually thwarted by difficult terrain. Presumably, the inhabitants of Llaqtacocha maintain a trail to the area of Los Chilchos, but we were unable to find it. At the edges of the pasture the forest is mostly pristine, though in one area recent burning was evident. Where the cloud forest canopy is less dense, *Chusquea* bamboo dominates the understorey. A second path leads down the steep slope of the moraine to the lake, which at 2,650 m extends roughly east to west c.2.5 km and is c.500 m wide. Cliffs enclose its southern and western edges. The forest at the west end of the lake is the most accessible. A well-maintained path connecting Ullilén to a much smaller lake, Quintecocha, transects essentially pristine cloud forest. Mist-netting efforts concentrated on this area.

Quintecocha (06°51'S 77°42'W; 3,130 m)

Two brief visits to Quintecocha by JF, W-PV and TM in 2002 revealed a reed-lined lake containing water-lilies near its shallow outlet. At 3,130 m, it is located in a transition towards *jalca* (probably of anthropic origin) and elfin forest, which dominate the flatter terrain nearest the lakeshore. In 2003 Quintecocha was the centre of activities and observations were made to 3,250 m.

Laguna El Plomo (06°51'S 77°43'W; 3,320 m)

Observations were made at 3,100–3,370 m. The lake is surrounded by *jalca*, with a transition to elfin forest that covers the flanks of the mountains surrounding the lake. Higher up, *jalca*, probably of anthropic origin, reappears.

La Muralla (06°48'S 77°45'W; 3,200 m)

About halfway along the route between Leimebamba and the Laguna de los Cóndores the trail reaches the pass of La Muralla, at 3,200 m. Located at the threshold of a large (c.5 km²) area of *jalca*/pasture, it derives its name from the imposing 'wall' (muralla) formed by the Cerro Pagrapagra (Fig. 4). On 19 July–21 July 2002, JF and W-PV investigated the sizeable relict forests at the base of Cerro Pagrapagra. Observations by TM and LA

were made during the two hours spent transiting this area on 14 and 18 July 2002. The elfin forest patches in this relatively flat area are apparently subject to frequent burning and grazing by cattle, and may have been subject to similar conditions in pre-Colombian times.

Llushpe, Quebrada Aguablanca, río Atuén (06°42'S 77°49'W–06°55'S 77°43'W; 2,700 m)

The ancient Inca road that follows the course of the río Atuén, from Leimebamba to its source at Laguna Sierpe (or Atuén), has been traversed by many collectors (e.g. Baron and Carriker). The trail serves several communities inaccessible by motorised vehicles (e.g. Atuén and Chuquibamba). It begins above Leimebamba and crosses several km of farmland, then traverses the canyon of the río Atuén which is still cloaked in wet montane forest. On 22–25 July, JF and W-PV ascended the trail to investigate part of this forest known locally as Llushpe. They established camp at Puromacho (2,700 m), a meadowland recently created by deforestation. Puromacho is one of the few places where at least some canopy trees remain near the river and provide a corridor between the steep sides of the valley where less-disturbed forest remains. Further, at 3,000 m, the trail continues through a wide valley dominated by pastures against steep cliffs. As the trail enters another narrow canyon, it passes through terrain covered with heavily grazed low shrubs. Patches of *Chusquea* sp. and low trees persist near the river's course.

On 4 June 2000, TM followed the trail c.18 km to Teabem (or Teaven; 3,400 m). Above Teabem, substantial tracts of *Chusquea* sp. blanket the hillsides. From Teabem, an eastward trail follows the wide, flat, rush-choked quebrada Aguablanca (where grazing has not appreciably altered the habitat) and provides a short-cut to La Morada, an isolated community on the east slope established by a quixotic local, Benigno Añazco, in the 1980s^{9,21}. On 5 June 2000 TM started on this trail. *Jalca* and pasture, typical of high elevations in this region, cover the hillsides. However, the last stretch of the trail, beyond a boulder-strewn valley, accesses relict *Gynoxys* 'forest' and small ponds in the valley floor fed by a stream, which the trail crosses twice (Fig. 5). It eventually reaches a pass at 3,700 m and connects with the Atuén–La Morada trail just below the high pass of Pasabreve. TM covered the length of the trail again on 9 June 2000 on his return to Leimebamba.

Río Huabayacu, El Jardín, Orfedón (06°56'S 77°41'W–06°58'S 77°38'W)

Beyond the junction, the trail enters the easterly-flowing drainage of the río Huabayacu, eventually reaching La Morada at 2,200 m. It traverses the floor of an impressive steep-walled valley, which

alternates between swampy flat areas and forest-covered terminal moraines in a series of 'steps'. TM established camp on 5–8 June 2000 at 3,000 m, at a *tambo* (Inca shelter) called El Jardín, near a deep, glacially carved lake (Laguna Baya), c.500 m long and 350 m wide. From El Jardín, the trail descends sharply following the río Huabayacu, which periodically disappears into porous ground, to its confluence with the Huayabamba (at 2,600 m). Thereafter, the trail follows the left bank of the larger river to another *tambo* called Orfedón (at 2,400 m). The steep forested slopes below cliff-faces have limited clearings for cultivation. TM reached Orfedón on two days (6–7 June 2000) but did not descend beyond there. On 8 June 2000, he relocated his camp towards the pass, to a small meadow at 3,400 m.

Environs of Leimebamba

A burgeoning population of *colonos* is altering the immediate surroundings of Leimebamba rapidly. Agricultural fields now cover most areas visible from the town. Rough terracing in many places suggests that in Chachapoyan times the view may have been somewhat similar. Small, wet, disturbed forest patches remain in places, usually on ridges with Chachapoyan archaeological sites. Some of these were visited by JF and W-PV on 21 July 2002. The cliffs along the río Atuén immediately above Leimebamba have a different vegetative composition, being generally dry and dominated by shrubs and terrestrial bromeliads in the steepest places. JF and W-PV investigated these micro-communities as well as roadside gardens, on 11 and 21 July. JB spent time around Leimebamba, mostly in the fields and forest remnants to the south, on 17–18 November, 29 November and 8 December 2003.

Los Chilchos (06°43'S 77°35'W; 1,690 m)

The village lies in an open area of c.6 km by 700 m on the east slope just north of Leimebamba. Observations at Los Chilchos include the forest to the north of the village. Field work centred on a hut at the extreme east of the village, at 1,690 m, and observations were made at 1,650–1,850 m. The habitat is humid subtropical forest with some second growth.

Río Blanco (06°46'S 77°33'W; 1,620 m)

Some 7 km south-east of the village of Los Chilchos, camp was established at a hut in a small deforested area at 1,620 m. The area comprises humid subtropical forest, of which some is secondary, interrupted by small agricultural fields. Moreover, several rock faces are present, rising abruptly from the level of the river to forested slopes at 1,900 m. All observations were made at 1,550–1,800 m.

Results

Approximately 250 species were recorded (Appendix 1). Two species are listed as Endangered (EN, *Loddigesia mirabilis* and *Aulacorhynchus huallagae*), four as Vulnerable (VU, *Leptosittaca branickii*, *Thripophaga berlepschi*, *Picumnus steindachneri*, *Hemispingus rufosuperciliaris*), and three as Near Threatened (NT, *Vultur gryphus*, *Andigena hypoglauca*, *Hemitriccus cinnamomeipectus*)³. Several records represent significant range extensions.

Noteworthy records

Silvery Grebe *Podiceps occipitalis juninensis*

A small number (10+) was present on Quintecocha in 2002. In 2003 a few were continuously present at Quintecocha and Laguna El Plomo. Although somewhat isolated records, they correspond with the species' patchy distribution north of its main distribution centres, notably Lake Junín.

Black-crowned Night Heron *Nycticorax nycticorax hoactli*

No definite breeding records in the temperate zone of Ecuador exist and the highland distribution north of the *altiplano* in dpto. Junín (Peru) is restricted to the western cordillera north to northern Ancash³². Black-crowned Night Herons from the *altiplano* may stray to humid slopes (mainly small ponds in the treeline zone). Colonies away from the *altiplano* have only been found at three sites: the Andamarca Valley (a warm valley in southern Ayacucho), the Cochabamba Basin (at 2,500 m in Bolivia) and along the adjacent Tunari range (also Bolivia), which forms the transition to the *Yungas* (J. Fjeldså *in litt.* 2005). The existence of a small colony (10–15 pairs) at Laguna de los Cóndores is therefore notable. A single bird roosting in a tree at Puromacho was possibly from the same colony.

Andean Condor *Vultur gryphus* NT

A pair present above Puromacho on two different dates. The male twice rested on cliffs above the forest. Presence of a nest seemed unlikely and could not be confirmed. More recently, on 23 November 2004, three were observed investigating a cliff a few km south of this location (R. Dover pers. comm.).

Speckled Teal *Anas flavirostris*

Several were recorded at ponds with Puna Teal *A. puna*, at 3,700 m in quebrada Aguablanca, and others were seen on nearly every pond in the río Huabayacu, including the large Laguna Baya. Furthermore, the species was present in large numbers (1,000+) at Laguna de los Cóndores and Quintecocha (100+). The species has been under-reported in the Cordillera Central but is common in appropriate habitat there.

Puna Teal *Anas puna*

Several at ponds covered with duckweed near the pass on the trail to La Morada, at 3,700 m, in the uppermost basin of quebrada Aguablanca in 2000. This record extends the species' range 150 km north and is the first for the Cordillera Central¹⁰. In 2003, *A. puna* was also observed at Laguna El Plomo, at 3,320 m, c.7 km further north.

Andean Duck *Oxyura ferruginea*

A small number (<5) was present at Quintecocha in 2002. In 2003 a similar number was also present at Laguna El Plomo. Being a high-altitude species, there are very few records from the Andes around the North-Peruvian low. The species has been recorded by TM (unpubl.) in the Cordillera Pishcohuauña, c.95 km north of this site.

Plumbeous Rail *Pardirallus sanguinolentus*

The subspecies *P. s. tschudii* is common in the *altiplanos* of Junín and Cuzco; however, in dpto. Cajamarca it apparently occurs at lower elevations along the upper río Marañón¹⁰. TM discovered two in marshland in quebrada Aguablanca at 3,500 m, suggesting the presence of a population in the highlands of the Cordillera Central, in dptos. Amazonas and San Martín. TM (unpubl.) had recorded the species previously along the río Utcubamba, at 1,800 m near Tingo, dpto. Amazonas (06°23'S 77°55'W), on 7 September 1993. Populations in rice fields in the upper río Marañón probably represent recent dispersal, perhaps from highlands where this rail's habitat is more extensive.

Golden-plumed Parakeet *Leptosittaca branickii* VU

Flocks were observed at three localities. One of c.20 individuals was present near the east end of Laguna de los Cóndores in 2002, with a similar-sized flock present in November 2003. A smaller flock was heard at Quintecocha in 2002. Around Laguna El Plomo on 23–24 November 2003, at least four different small groups were present, totalling c.12, at 3,320–3,400 m moving between the tree crowns. A flock of five was seen on 5 June 2000, at 3,500 m, over elfin forest in the upper Huabayacu Valley. The well-preserved habitat in the general area may be important for this conservation-dependent species.

Mountain Parakeet *Bolborhynchus aurifrons*

A group of 27 *Bolborhynchus* was present, on 27 November 2003, on the moraine separating Laguna de los Cóndores from the río Lajabamba. The birds were intense lemon-green with yellow chins, and were apparently *B. aurifrons*. This seems to be the first record for the Cordillera Central¹⁰.

Barred Parakeet *Bolborhynchus lineola*

A flock of *Bolborhynchus* was sound-recorded as it flew towards the forest above Ullilén on 15 July 2002. The calls (xc146) match recordings of Barred Parakeet from elsewhere in its range. There are relatively few localities known for this species in Peru¹⁰.

Andean Hillstar *Oreotrochilus estella stolzmanni*

At 3,525 m (06°54'S 77°43'W), in quebrada Aguablanca a female was flushed from below an embankment at a point where the trail crosses the stream. The bird flew to several perches nervously flicking the tail, before eventually disappearing, possibly to a nest (not located). Field marks included a greyish throat with rows of steely green discs, steely green back, decurved blackish bill and tail with a whitish terminal band and a basal white patch when spread. Several females were recorded in the extreme south of the Cordillera Central, at Tantomayo, dpto. Huánuco, in 1997 (W-PV unpubl.). A male collected at quebrada La Caldera, dpto. La Libertad, in 1979 (LSUMZ 91485) represents the closest locality (c.150 km away), but has been overlooked in at least some literature^{10,31}. Andean Hillstar was previously known from the Cordillera Huayhuash and Lake Junín north to southernmost Ecuador only along the main Andes. Its occurrence in the Cordillera Central, extending its distribution some 400 km along the east bank of the upper río Marañón, nearly doubles its range.

Purple-backed Thornbill *Ramphomicron microrhynchum*

A female was mist-netted at Quintecocha on 20 November 2003. The closest record is from the west bank of the río Marañón, albeit perhaps only 30 km away. Ours is apparently the most northerly from the Cordillera Central, indicating that the species possibly occurs throughout its length.

Marvellous Spatuletail *Loddigesia mirabilis* EN

Among our most notable observations are those of *L. mirabilis* in the environs of Leimebamba. The species was observed twice: once c.1 km south of the museum on 29 November 2003, when a male was briefly observed in flight showing a very long unfeathered part to the tail that ended in huge spatules. Two days were spent in the same general area, on 17 November and 8 December 2003, without encountering the species again. This is a relatively well-visited spot, and apparently the species is only rarely (or seasonally?) present there. The second sighting was made on the east bank of the río Utcubamba at c.2,700 m on 1 December 2003, whilst ascending the trail to Los Chilchos. A male made a semicircular flight around the observers, permitting clear views of the tail, especially the spatules at its tip. Habitat in the

area was a mosaic of cleared and degraded shrubland or pastureland, with small, seemingly impenetrable, relict forests of gnarled and dwarf trees.

Yellow-browed Toucanet *Aulacorhynchus huallagae* EN

This species' croaking calls were recorded near the confluence of the ríos Huabayacu and Huayabamba on 7 June 2000. One obtained (using slingshot?) by local hunters was found at the *tambo* at Orfedón on 8 June 2000. Apparently, the bird was intended as a 'gift' as TM had queried some locals he met on the trail earlier about the species. They had described it convincingly, from the narrow elevation band in which it occurs to its physical characteristics: yellow vent, red rump, bluish bill, greenish overall coloration and small size (relative to *Ramphastos*). The bird was photographed while still alive (Fig. 9). Endemic to the northern Cordillera Central, Yellow-browed Toucanet forms a superspecies with Crimson-rumped Toucanet *A. haematopygus* and Blue-banded Toucanet *A. coeruleicinctis*, which range north and south respectively³⁸. Throughout its range, the species is restricted to a narrow elevation band between the higher-elevation Grey-breasted Mountain Toucan *Andigena hypoglauca* and lower-elevation Emerald Toucanet *Aulacorhynchus prasinus*. It is represented in museums by six specimens from three different localities within 90 km of each other^{6,35}. Although our record extends the known range c.70 km north from río 'El Susto', dpto. San Martín (nearly doubling its documented range), it merely confirms the probable distribution. Nevertheless, this toucanet has not been recorded at two well-surveyed, seemingly suitable areas north and south of its known range, Abra Patricia, dpto. San Martín, and 'Paty Tea Plantation', dpto. Huánuco, respectively. Delimiting the range of this Endangered species requires further transects of remote parts of the Cordillera Central, especially between Tayabamba and the Cordillera Carpish. As it is hunted, local people should be familiar with the bird and could provide information as to its abundance and distribution. Near Orfedón (Fig. 10) *A. huallagae* was apparently locally common.

Grey-breasted Mountain Toucan *Andigena hypoglauca* NT

Very common around Puromacho, with as many as ten encountered within c.1 km of the camp on 24 July 2002. It was also noted at the río Huabayacu on 7 June 2000 (TM).

Speckle-chested Piculet *Picumnus steindachneri* VU

A pair was observed near the village of Los Chilchos on 7 December 2003, moving quickly

amongst the branches, c.5–6 m above ground. The species has also been recorded at La Morada⁹.

Russet-mantled Softtail *Thripophaga berlepschi* VU

Three were observed in a mixed-species flock near Teabem, at 3,200 m, in a patch of tall riparian brush dominated by *Chusquea* sp. They ascended the stalks, periodically flying to the mid-lower levels of adjacent stalks. The site lies between two collecting localities, Leimebamba (the type locality) and Atué, and there are still large tracts of suitable habitat above the trail. Another was seen in elfin forest at 3,500 m along the río Huabayacu, establishing a new upper-elevation limit for the species (from 3,350 m)¹⁰. A single was caught in mist-nets at Quintecocha on 28 November 2003, where the species was also observed in a mixed-species flock. Finally, it was observed at mid height in shrubby forest at the base of Laguna de Los Cóndores at 2,700 m.

Pale-billed Antpitta *Grallaria carrikeri*

On 16 July 2002 TM observed this species in cloud forest understorey below the outlet of the Laguna de los Cóndores, at 2,600 m. The bird hopped onto a horizontal limb c.1 m above ground and, in apparent response to a vocalising Rusty-tinged Antpitta *G. przewalskii*, produced a previously undescribed voice similar to an alternate voice (response to playback) of its presumed northern congener, Chestnut-naped Antpitta *G. nuchalis*²⁸ (xc10924). The vocalisation (xc734) comprises 4–13 high (5 kHz) *tséep* notes delivered at c.1 per second and with intervals of 6–9 seconds. A sonogram appears as Fig. 6. The bird called for c.5 minutes. Similar calls were identified on a sound-recording, obtained after playback of the song of *G. carrikeri*, on the trail from Ullilén to Quintecocha (xc749). On several occasions a second call that we attribute to this species was heard, typically in *Chusquea* stands. The call is delivered in a cadence reminiscent of the better-known six-note 'staccato' call of the species^{14,36} and differs mainly in having more notes, at least as many as nine. A sonogram of this call as recorded here (xc151) also forms part of Fig. 6.

Rufous Antpitta *Grallaria rufula obscura*

From the literature¹⁰ it is unclear which subspecies occurs in the region. The single mist-net capture in 2002 (Fig. 7) was very pale and matches descriptions of *C. r. obscura*. A similar bird was collected from a Tomahawk rat trap in 2003 at Quintecocha, where birds were seen daily. Calls attributed to this species (xc150) are quite similar to those of *C. r. obscura* in Huánuco¹⁴. Other calling birds were noted in remnant forests near Leimebamba on 29 November 2003.

Tawny Antpitta *Grallaria quitensis atuensis*

This subspecies has warm buff to pale orange cheeks, throat and upper breast, which abruptly became muted on the whitish-mottled breast and belly. Its vocalisations differ from those of the nominate (xc162, xc166). We found this taxon common in appropriate habitat, where it was easily observed on rock outcrops in *jalca*.

Tschudi's Tapaculo *Scytalopus acutirostris*

A *kee-k-rrrrrrr* song very similar to that characteristic of this form was recorded on Cerro Atalaya and at La Muralla in July 2002 (xc144, xc145; Fig. 8). The species appears common in pristine as well as disturbed elfin forest. The closest documented records are from Bosque Unchog, dpto. Huánuco. Records from the study area indicate that the species occurs along the entire Cordillera Central from Huánuco north. The occurrence of this taxon was a surprise, especially as *S. latrans intermedius* was not encountered. Numerous specimens of the latter are known from the general area¹⁰, suggesting that it should be rather common. However, the song of *S. l. intermedius* is unknown and it is possible that calls we attributed to Large-footed Tapaculo *S. macropus* (which we also trapped, in November 2003 near Quintecocha) refer to *S. l. intermedius*.

Neblina Tapaculo *Scytalopus altirostris*

Seen by TM near Pasabreve (3,700 m) in tussocks along creek banks and shrubbery on steep slopes, in July 2000. It was also sound-recorded and observed at Cerro Atalaya and La Muralla in July 2002 (xc147).

Cinnamon-breasted Tody-Tyrant *Hemitriccus cinnamomeipectus* NT

One was observed by JB along a trail in the Río Blanco area (c.1,600 m), on 4 December 2003. The species is known from only a handful of scattered localities, ranging from the Cordillera del Cóndor south to Abra Patricia, where it prefers poor-soil ridgetop elfin forests³. Bar-winged Wood Wren *Henicorhina leucopterus* occurs syntopically with *H. cinnamomeipectus* at the same localities, but is also known from one locality in the Cordillera Central, below Cumpang on the trail to Utcubamba. The lower altitudes of the east side of the Cordillera Central are especially poorly known, raising the possibility that *H. cinnamomeipectus* may be more widespread than assumed. As the significance of the sighting was under-appreciated at the time, very few details were noted, and future expeditions should aim to clarify the status and ecology of the species in the area.

Black-billed Shrike-Tyrant *Agriornis montana*

On 5 June 2000, two were seen in open pasture at 3,500 m in quebrada Aguablanca. The species has been overlooked in the Cordillera Central^{10,31} and we are unaware of any specimens from the area.

Taczanowski's Ground Tyrant *Muscisaxicola griseus*

Two *M. griseus* were observed at 3,500 m on 5 and 9 June 2000. *Muscisaxicola griseus* is known from the main Andes, from dpto. Cajamarca south to Bolivia including near the headwaters of the río Marañón where the Cordillera Central branches east; however, specimens from quebrada La Caldera, dpto. La Libertad (LSUMZ 92650–51), indicate that its presence in the Cordillera Central has been previously overlooked¹⁰. Our sighting extends its range 150 km north in the Cordillera Central.

Jet Manakin *Chloropipo unicolor*

A male joined a mixed-species flock at 2,400 m near Orfedón. It exposed the white underwing-coverts as it jumped from a perch to feed at a clump of unidentified white berries in the understorey within 1 m of the forest floor. Jet Manakin was known to 1,900 m in Peru³⁴ though a specimen from Cumbre de Ollón, dpto. Pasco (LSUMZ 106157), was taken at 2,500 m. Our sighting provides further evidence of a broader elevational range, at least in the south of its distribution.

Tit-like Dacnis *Xenodacnis parina bella*

TM found the species common along quebrada Aguablanca in *Gynoxys* at 3,500 m. This subspecies (type specimen from Atué) had not been recorded recently (since 1979 at Mashua; LSUMZ 91573, 93495–93507, 94162), largely due to lack of habitat near main roads. The form is endemic to the Cordillera Central and recent authorities suggest that its taxonomic status demands review³².

Rufous-browed Hemispingus *Hemispingus rufosuperciliaris* VU

One was trapped (Fig. 11) and two observed together in *Chusquea* near Ullilén in July 2002. On 18 November 2003 one was trapped at Quintecocha. These are new locations, but merely confirm the species' assumed presence between the Cordillera de Colán and río Abiseo.

Pardusco *Nephelornis oneilli*

Several observed in mixed-species flocks, at 3,500 m, in elfin forest/scrub on the wet upper slopes above El Jardín, by TM, on 5, 8 and 9 June 2000. Small groups were also observed just below Cerro Atalaya beside Laguna de los Cóndores by W-PV. TM saw one in a mixed-species flock in elfin forest at Quintecocha on 17 July 2002, whilst another was mist-netted there on 20 November 2003 and one seen on 22 November 2003. Our records extend its

range c.75 km north from Puerto del Monte, dpto. San Martín (c.07°32'S 77°29'W). Its occurrence raises the possibility that Bay-vented Cotinga *Ampelion sclateri*, *Buthraupis aureodorsalis* and Golden-collared Tanager *Iridosornis jelskii* may eventually be found in the general area, as all have otherwise similar ranges in the Cordillera Central.

Discussion

Our observations mostly corroborate assumed avian distributions within this region of Peru, but nonetheless play the useful role of confirming continuity within each species' range. In the case of threatened species such as *Aulacorhynchus huallagae*, *Loddigesia mirabilis*, *Hemitriccus cinnamomeipectus* and *Hemispingus rufosuperciliaris*, this is especially important as it will assist future conservation initiatives. Our data also reveal that waterbirds have been particularly neglected in the Cordillera Central, possibly due to the reluctance of earlier collectors to skin larger birds, particularly if they are common elsewhere. Important modern collecting sites such as Bosque Unchog, Mashua and La Peca have been away from areas with lakes.

Our sites represent the known northern terminus of the ranges of at least two species, Tschudi's Tapaculo *Scytalopus acutirostris* and Pardusco *Nephelornis oneilli*. Possibly this is also true of *Ampelion sclateri*, *Buthraupis aureodorsalis* and *Iridosornis jelskii*. All of these species require exceptionally wet conditions and high altitude, and have not been detected in the cordilleras Pishcohuauña or Colán despite extensive collecting activity. Targeted efforts in the páramo elfin forest ecotone in the region should be initiated.

Several other species, especially Stripe-headed Antpitta *Grallaria andicola*, *G. ruficapilla* and *Xenodacnis parina*, probably reach their northernmost limit in the Cordillera Central near our sites. All other species found at our study sites also occur in the cordilleras Colán and Pishcohuauña with the probable exception of *Aulacorhynchus huallagae* whose tiny elevational range is almost certainly fragmented further north due to geological conditions. For instance, near Abra Patricia, a zone of stunted forest on poor soils is present at the appropriate elevation, whilst near Chachapoyas, where the species' range could spill into the Utcubamba Valley, conditions are probably too dry. At best it may occur to the north in small relict populations. Our study sites represent the southern terminus only for species of open habitats created by the rainshadow of the upper Marañón and Utcubamba valleys, e.g. *Thamnophilus ruficapillus jaczewskii*, *Heliangelus viola*, *Coeligena iris* and *Loddigesia mirabilis*. Wet-forest species mostly occur the entire length of the Cordillera Central.

An important (but unexplored) southern range terminus and/or species changeover occurs further south, somewhere between Tayabamba and Bosque Unchog, and affects Yellow-browed Toucanet *Aulacorhynchus huallagae*, Mountain Avocetbill *Opisthoprora euryptera*, White-faced Nunbird *Hapaloptila castanea*, Russet-mantled Softtail *Thripophaga berlepschi*, White-browed Thistletail *Schizoeaca fuliginosa peruviana/plengei*, Pale-billed Antpitta *Grallaria carrikeri*, Rusty-tinged/Bay Antpitta *G. przewalskii/capitalis*, Tawny Antpitta *G. quitensis atuensis*, Crowned Chat-Tyrant *Ochthoeca frontalis frontalis/spodionota*, Plain-tailed Wren *Thryothorus euophrys schulenbergi*, Northern Rufous-naped/ Tricoloured Brush Finch *Atlapetes rufinucha latinuchus/tricolor tricolor* and Stripe-headed Brush Finch *Buarremon torquatus assimilst. poliophrys*. White-browed Conebill *Conirostrum ferrugineiventre*, Three-striped Hemispingus *Hemispingus trifasciatus* and Slaty Brush Finch *Atlapetes schistaceus taczanowskii* reach their northern limit in the same general area.

We suggest that 'filling-in-the-blanks' inventories such as that described here are still required, particularly in the mid Huallaga and uppermost Marañón valleys, as well as in the highlands between the Cordillera Carpish and general area of Tayabamba. Careful mapping of bird distributions will help determine points of habitat changeover and permit better understanding of species limits and speciation.

Finally, there is the conservation imperative. The area between the study sites and the Parque Nacional Río Abiseo covers c.500,000 ha of upper montane habitat, a region of considerable biological, ecological and archaeological interest. Demographic pressures are increasing rapidly on this relatively sparsely populated area. Apart from measures to reduce the ecological impact of those agricultural practices already introduced, an indispensable part of the conservation measures needed appears to be the formation of new protected areas. Few areas in the world provide a more appropriate place to study biogeography. This alone should inspire us to preserve the extraordinary diversity of the Cordillera Central.

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[†] Louise Augustine died on 29 January 2007 following a long struggle against cancer, a battle that she fought with dignity, steadfast determination and the complete lack of self-pity that characterised her spirit. Typically, she made much more of any birding trips she could make during remissions, than all the suffering she bore. I first met Louise in 1997 during a month-long trip to Colombia. One bird that eluded us, Cundinamarca Antpitta *Grallaria kaestneri*, had, within a few months, lured her and three fellows back to the country in an ill-fated trip during which they were made captive by the FARC. On release, Louise bemoaned the fact that her new binoculars were not as good as the ones she'd had before, more than their ordeal as captives. I made many other trips with Louise, to places as far afield as Brazil, Cuba, Turkey and Vietnam, but she really did get as much pleasure from watching the birds in her yard. She will be missed in the wild places on Earth where there are still birds aplenty.—Guy M. Kirwan.

Appendix I. List of birds observed. Nomenclature follows Remsen et al.³⁰

Scientific name	EBA, threat	Leimebamba	Rio Aútun	1. Cóndores, 2. la Muralla	1. Quintecocha, 2. El Plomo	Quebrada Huabayacu	1. Chichos, 2. Blanco
<i>Nathoprocta curvirostris</i> Curve-billed Tinamou	x						
<i>Podiceps occipitalis</i> Silvery Grebe	1	1,2					
<i>Nycticorax nycticorax</i> Black-crowned Night Heron	x	1					
<i>Merganetta armata</i> Torrent Duck	x						
<i>Anas flavirostris</i> Speckled Teal	x	1	1,2	x			
<i>Anas puna</i> Puna Teal	x	2					
<i>Oxyura (jamaicensis) ferruginea</i> Andean Duck	x	1	1,2				
<i>Coragyps atratus</i> Black Vulture	x	x					
<i>Cathartes aura</i> Turkey Vulture	x	x	1				

<i>Vultur gryphus</i> Andean Condor	NT	x	<i>Aglaiocercus kingi</i> Long-tailed Sylph	x
<i>Elanoides forficatus</i> Swallow-tailed Kite	1	1	<i>Loddigesia mirabilis</i> Marvellous Spatuletail	EN, 049 x
<i>Ictinia plumbea</i> Plumbeous Kite	1		<i>Myiurus fanny</i> Purple-collared Woodstar	x
<i>Leucopternis albigollis</i> White Hawk	1		<i>Acestrura mulsant</i> White-bellied Woodstar	x x
<i>Accipiter (striatus) erythronemius</i> Sharp-shinned Hawk	1,2		<i>Pharomachus auriceps</i> Golden-headed Quetzal	x x
<i>Falco sparverius</i> American Kestrel	x	x 1	<i>Trogon personatus</i> Masked Trogon	1 1 x
<i>Falco femoralis</i> Aplomado Falcon	x		<i>Eubucco versicolor</i> Versicoloured Barbet	1,2
<i>Falco rufigularis</i> Bat Falcon	2		<i>Picumnus steindachneri</i> Speckle-chested Piculet	VU, 044 2
<i>Buteo magnirostris</i> Roadside Hawk	1,2		<i>Aulacorhynchus huallagae</i> Yellow-browed Toucanet	EN, 049 x
<i>Buteo polyosoma</i> Red-backed Hawk	1,2		<i>Andigena hypoglauca</i> Grey-breasted Mountain Toucan	NT x x x
<i>Spizaetus tyrannus</i> Black Hawk-Eagle	2		<i>Veniliornis fumigatus</i> Smoky-brown Woodpecker	x x
<i>Phalacroboenus megalopterus</i> Mountain Caracara	x	x 1,2	<i>Veniliornis nigriceps</i> Bar-bellied Woodpecker	x 1 x
<i>Penelope montagnii</i> Andean Guan	x	1 2 x	<i>Piculus rivoli</i> Crimson-mantled Woodpecker	x x 1 1
<i>Pardirallus sanguinolentus</i> Plumbeous Rail	x		<i>Piculus rubiginosus</i> Golden-olive Woodpecker	1
<i>Vanellus resplendens</i> Andean Lapwing	x	2 x	<i>Colaptes rupicola</i> Andean Flicker	x 2 x
<i>Gallinago andina</i> Puna Snipe			<i>Dryocopus lineatus</i> Lineated Woodpecker	1,2
<i>Gallinago stricklandii</i> Cordilleran Snipe	2r		<i>Campophilus pollens</i> Powerful Woodpecker	x,r 1
<i>Actitis macularius</i> Spotted Sandpiper	1		<i>Sittasomus griseicapillus</i> Olivaceous Woodcreeper	2
<i>Larus serranus</i> Andean Gull	x	1,2	<i>Xiphorhynchus ocellatus</i> Ocellated Woodcreeper	2c
<i>Patagioenas fasciata</i> Band-tailed Pigeon	x	1,2	<i>Xiphocolaptes promeropyrhynchus</i> Strong-billed Woodcreeper	x,r
<i>Patagioenas subvinacea</i> Ruddy Pigeon	1		<i>Leptidocolaptes affinis</i> Montane Woodcreeper	x x 1
<i>Leptotila verreauxi</i> White-tipped Dove	x	x 1	<i>Cinclodes fuscus</i> Bar-winged Cinclodes	x 2
<i>Geotrygon frenata</i> White-throated Quail-Dove	2c		<i>Schizoeaca fuliginosa peruviana</i> Peruvian Thistletail	x 1,2 2 x
<i>Aratinga leucophthalmus</i> White-eyed Parakeet	2		<i>Synallaxis azarae fruticicola</i> Azara's Spinetail	1 x x
<i>Aratinga wagleri</i> Scarlet-fronted Parakeet	x		<i>Synallaxis unirufa</i> Rufous Spinetail	1,2 2 x
<i>Leptosittaca branckii</i> Golden-plumed Parakeet	VU	1 2 x	<i>Cranioleuca baroni</i> Baron's Spinetail	? x
<i>Bolborhynchus lineola</i> Barred Parakeet	1 r		<i>Asthenes flammulata</i> Many-striped Canastero	x 2
<i>Bolborhynchus aurifrons</i> Mountain Parakeet	1		<i>Thripophaga berlepschi</i> Russet-mantled Softtail	VU, 049 x 1c x
<i>Amazona mercenaria</i> Scaly-naped Parrot	2		<i>Margarornis squamiger</i> Pearled Treerunner	x x 1 1c,2 x
<i>Pionus seniloides</i> White-capped Parrot	xr		<i>Premnomis guttuligera</i> Rusty-winged Barbtail	x
<i>Piaya cayana</i> Squirrel Cuckoo	1,2		<i>Premnoplex brunnescens</i> Spotted Barbtail	x 2c
<i>Crotaphaga sulcirostris</i> Groove-billed Ani	x		<i>Pseudocolaptes boissonneautii</i> Streaked Tuftedcheek	x x 1,2 x
<i>Bubo virginianus</i> Great Horned Owl	x		<i>Philydor rufus</i> Buff-fronted Foliage-gleaner	x,r 2
<i>Glaucidium jardiinii</i> Andean Pygmy Owl	1r	1r	<i>Thripadectes scrutator</i> Rufous-backed Treehunter	x,c 1 1
<i>Megascops albugularis</i> White-throated Screech Owl	2		<i>Xenops rutilans</i> Streaked Xenops	2
<i>Ciccaba albifasciata</i> Rufous-banded Owl	x	1 1	<i>Cercamacra nigrescens</i> Blackish Antbird	2r
<i>Pulsatrix melanota</i> Band-bellied Owl	2r		<i>Thamophilus ruficapilla</i> Rufous-capped Antshrike	x x
<i>Uropsalis segmentata</i> Swallow-tailed Nightjar	?	1rc x	<i>Formicarius rufpectus</i> Rufous-breasted Antthrush	2
<i>Streptoprocne zonaris</i> White-collared Swift	1,2	1	<i>Gallaria ruficapilla</i> Chestnut-crowned Antpitta	x x 1,2 1
<i>Aeronautes montivagus</i> White-tipped Swift	x		<i>Gallaria andicola</i> Stripe-headed Antpitta	2 r
<i>Phaetornis guy</i> Green Hermit	2c		<i>Gallaria carikeri</i> Pale-billed Antpitta	049 1 r x
<i>Colibri thalassinus</i> Green Violetear	x	x ? x	<i>Gallaria przewalskii</i> Rusty-tinged Antpitta	049 1 x
<i>Thalurania furcata</i> Fork-tailed Woodnymph	2c		<i>Gallaria quitensis atuenis</i> Tawny Antpitta	1,2
<i>Amazilia chionogaster</i> White-bellied Hummingbird	x		<i>Gallaria rufula obscura</i> Rufous Antpitta	1c,2 1c,2
<i>Adelomyia melanogenys</i> Speckled Hummingbird	x	2c	<i>Gallaria squamigera</i> Undulated Antpitta	1,2
<i>Heliodoxa leadbeateri</i> Violet-fronted Brilliant	2c		<i>Conopophaga castaneiceps</i> Chestnut-crowned Gnateater	2c
<i>Lafresnaya lafresnayi</i> Mountain Velvetbreast	x	x 1c	<i>Scytalopus macropus</i> Large-footed Tapaculo	049 1c
<i>Pterophanes cyanopterus</i> Great Sapphirewing	2		<i>Scytalopus altirostris</i> Neblina Tapaculo	1r x
<i>Coeligena coeligena</i> Bronzy Inca	x	2c	<i>Scytalopus acutirostris</i> Tschudi's Tapaculo	1r
<i>Coeligena iris</i> Rainbow Starfrontlet	046	x	<i>Scytalopus atratus</i> Northern White-crowned Tapaculo	2c
<i>Coeligena torquata</i> Collared Inca	1	1 x	<i>Elaenia flavogaster</i> Yellow-bellied Elaenia	1?
<i>Coeligena violifer</i> Violet-throated Starfrontlet	1	1c	<i>Elaenia obscura</i> Highland Elaenia	x
<i>Ensifera ensifera</i> Sword-billed Hummingbird	x	1	<i>Mecocerculus leucophrys</i> White-throated Tyrannulet	x 2 x
<i>Boissonneaua matthewsii</i> Chestnut-breasted Coronet	x		<i>Mecocerculus poecliocercus</i> White-tailed Tyrannulet	x x x
<i>Helangelus amethysticollis</i> Amethyst-throated Sunangel	1	1c x	<i>Mecocerculus stictopterus</i> White-banded Tyrannulet	x x 1,2 1,2 x
<i>Helangelus viola</i> Purple-throated Sunangel	046	x	<i>Serpophaga cinerea</i> Torrent Tyrannulet	1
<i>Erionemis luciani</i> Sapphire-vented Puffleg	1c		<i>Anairetes parulus</i> Tufted Tit-Tyrant	x 2
<i>Lesbia nuna</i> Green-tailed Trainbearer	x		<i>Anairetes flavirostris</i> Yellow-billed Tit-Tyrant	2
<i>Ocreatus underwoodii</i> Booted Racket-tail	1c		<i>Mionectes striaticollis</i> Streak-necked Flycatcher	x 2c
<i>Ramphomicron microrhynchum</i> Purple-backed Thornbill	1c		<i>Phylloscartes poecilotis</i> Variegated Bristle Tyrant	1,2
<i>Metallura theresiae</i> Coppery Metaltail	048	2 1c x		
<i>Metallura tyrianthina</i> Tyrian Metaltail	x	1 1c,2		
<i>Chalcostigma ruficeps</i> Rufous-capped Thornbill	x	1c x		

<i>Hemitriccus cinnamomeipectus</i>				<i>Cnemoscopus rubrirostris</i> Grey-hooded Bush Tanager	x	1,2	
Cinnamon-breasted Tody-Tyrant	NT	2		<i>Hemispingus atropileus</i> Black-capped Hemispingus	x	1, 2	x
<i>Pseudotriccus ruficeps</i> Rufous-headed Pygmy Tyrant				<i>Hemispingus frontalis</i> Oleaginous Hemispingus	x		
<i>Todirostrum cinereum</i> Common Tody-Flycatcher	1			<i>Hemispingus rufosuperciliaris</i>			
<i>Tolmomyias sulphureus</i> Yellow-olive Flatbill	2			Rufous-browed Hemispingus	049	VU	1c 1c
<i>Myiobius villosus</i> Tawny-breasted Flycatcher	2c			<i>Hemispingus superciliosus</i> Superciliaried Hemispingus	x	x	1,2 1c,2 x
<i>Myiophobus ochraceiventris</i>				<i>Hemispingus xanthophthalmus</i> Drab Hemispingus	x	x	1,2 1c x
Ochraceous-breasted Flycatcher	x	1	1c	<i>Thyropsis ornata</i> Rufous-chested Tanager	x	x	1 1
<i>Pyrrhomyias cinnamomea</i> Cinnamon Flycatcher	x	x	1,2 1c x	<i>Lanio fulvus</i> Fulvous Shrike-Tanager	2		
<i>Contopus cooperi</i> Olive-sided Flycatcher	2			<i>Creurgops verticalis</i> Rufous-crested Tanager	x	2	
<i>Contopus fumigatus</i> Smoke-coloured Pewee	x	1	x 1	<i>Trichothraupis melanops</i> Black-goggled Tanager	2c		
<i>Contopus sordidulus/virens</i>				<i>Piranga rubriceps</i> Red-hooded Tanager	x		
Western/Eastern Wood Pewee	1,2			<i>Piranga flava</i> Hepatic Tanager	1,2		
<i>Ochthoeca cinnamomeiventris thoracica</i>				<i>Calochaetes coccineus</i> Vermilion Tanager	1		
Slaty-backed Chat-Tyrant	x	1	x	<i>Thraupis cyanocephala</i> Blue-capped Tanager	1		
<i>Ochthoeca fuscicollis</i> Brown-backed Chat-Tyrant	x	1,2	x	<i>Thraupis episcopus</i> Blue-grey Tanager	x	1	
<i>Ochthoeca pulchella</i> Golden-browed Chat-Tyrant	x	1		<i>Buthraupis montana</i> Hooded Mountain Tanager	1	1	x
<i>Ochthoeca rufipectoralis</i> Rufous-breasted Chat-Tyrant	x	1,2 1c,2	x	<i>Anisognathus igniventris</i>			
<i>Colonia colonus</i> Long-tailed Tyrant	1			Scarlet-breasted Mountain Tanager	x	1	1,2 x
<i>Agriornis montana</i> Black-billed Shrike-Tyrant	x			<i>Anisognathus lacrymosus</i> Lacrimose Mountain Tanager	1	x	
<i>Muscisaxicola griseus</i> Taczanowski's Ground Tyrant	x			<i>Idiosomus reinhardti</i> Yellow-scarfed Tanager	049	1	1c x
<i>Myiarchus tuberculifer</i> Dusky-capped Flycatcher	x			<i>Euphonia xanthogaster</i> Orange-bellied Euphonia	2		
<i>Myiarchus cephalotes</i> Pale-edged Flycatcher	x			<i>Chlorochrysa calliparaea</i> Orange-eared Tanager	2c		
<i>Hirundinea ferruginea</i> Cliff Flycatcher	2			<i>Dubusia taeniata</i> Buff-breasted Mountain Tanager	1	x	
<i>Conopias cinchoneti</i> Lemon-browed Flycatcher	1,2			<i>Tangara arthus</i> Golden Tanager	2		
<i>Tyrannus melancholicus</i> Tropical Kingbird	x	1,2		<i>Tangara chilensis</i> Paradise Tanager	2		
<i>Pachyrhamphus versicolor</i> Barred Becard	1			<i>Tangara cyanicollis</i> Blue-necked Tanager	2		
<i>Ampelion rubrocristatus</i> Red-crested Cotinga	x	1,2		<i>Tangara gyrola</i> Bay-headed Tanager	2		
<i>Pipreola arcuata</i> Barred Fruiteater	1	x		<i>Tangara punctata</i> Spotted Tanager	2		
<i>Pipreola riefferii</i> Green-and-black Fruiteater	1	x		<i>Tangara nigroviridis</i> Beryl-spangled Tanager	x	x	
<i>Rupicola peruviana</i> Andean Cock-of-the-Rock	2			<i>Tangara vassorii</i> Blue-and-black Tanager	x	1	x
<i>Notochelidon cyanoleuca</i> Blue-and-white Swallow	x	x	1 2 1	<i>Tangara viridicollis</i> Silver-backed Tanager	x	x	
<i>Notochelidon murina</i> Brown-bellied Swallow	x	1	x	<i>Tangara xanthocephala</i> Saffron-crowned Tanager	2		
<i>Anthus bogotensis</i> Páramo Pipit	x	2	x	<i>Cyanerpes caeruleus</i> Purple Honeycreeper	2		
<i>Cinclus leucocephalus</i> White-capped Dipper	x			<i>Nephelornis oneilli</i> Pardusco	049	1	1c x
<i>Cinnycerthia peruana</i> Peruvian Wren	1,2	1c	x	<i>Xenodacnis parina</i> Tit-like Dacnis	x		
<i>Cistothorus platensis</i> Grass Wren	x	1	1	<i>Diglossa albilatera</i> White-sided Flowerpiercer	x	1c,2	
<i>Thryothorus euophrys schulenbergi</i> Plain-tailed Wren	1	1,2	1,2	<i>Diglossa brunneiventris</i> Black-throated Flowerpiercer	1c		
<i>Troglodytes aedon</i> House Wren	1c	1		<i>Diglossa cyanea</i> Masked Flowerpiercer	x	x	1,2 1,2 x
<i>Troglodytes solstitialis</i> Mountain Wren	x	x	1 1c,2 x	<i>Diglossa mystacalis</i> Moustached Flowerpiercer	x	1,2 1c,2	
<i>Henicorhina leucophrys</i> Grey-breasted Wood Wren	x?	x	2	<i>Parula pitayumi</i> Tropical Parula	1		
<i>Myadestes ralloides</i> Andean Solitaire	x			<i>Dendroica fusca</i> Blackburnian Warbler	1		
<i>Catharus fuscater</i> Slaty-backed Nightingale-Thrush	x			<i>Setophaga ruticilla</i> American Redstart	2		
<i>Catharus ustulatus</i> Swainson's Thrush	2c			<i>Wilsonia canadensis</i> Canada Warbler	2		
<i>Turdus fuscater</i> Great Thrush	x	x	1,2 1,2 x	<i>Myioborus melanoccephalus</i> Spectacled Whitestart	x	x	1,2 1,2 x 1,2
<i>Turdus nigricaps</i> Slaty Thrush	x			<i>Myioborus miniatus</i> Slate-throated Whitestart	x		
<i>Zonotrichia capensis</i> Rufous-collared Sparrow	x	x	1,2 x	<i>Basileuterus coronatus</i> Russet-crowned Warbler	x	x	
<i>Phrygilus plebejus</i> Ash-breasted Sierra Finch	x			<i>Basileuterus luteoviridis</i> Citrine Warbler	x	x	1,2 1c x
<i>Phrygilus unicolor</i> Plumbeous Sierra Finch	x	x		<i>Basileuterus nigrocristatus</i> Black-crested Warbler	x		
<i>Haplospiza rustica</i> Slaty Finch	1c			<i>Basileuterus tristriatus</i> Three-striped Warbler	x		
<i>Sporophila luctuosa</i> Black-and-white Seedeater	x			<i>Conirostrum albifrons</i> Capped Conebill	x	1,2	1 x
<i>Atlappetes latinuchus latinuchus</i>				<i>Conirostrum sitticolor</i> Blue-backed Conebill	x	1,2 1c,2	x
Yellow-breasted Brush Finch	x	x	1c,2 1,2 x	<i>Psarocolius angustifrons</i> Russet-backed Oropendola	1,2		
<i>Atlappetes torquatus</i> Stripe-headed Brush Finch	1	1,2	x	<i>Vireo leucophrys</i> Brown-capped Vireo	x		
<i>Cissopis leveriana</i> Magpie Tanager	2			<i>Hylophilus olivaceus</i> Olivaceous Greenlet	2		
<i>Catamblyrhynchus diadema</i> Plushcap	1	x		<i>Cyclarhis gujanensis</i> Rufous-browed Peppershrike	x	x	1
<i>Pheucticus chrysogaster</i> Yellow Grosbeak	x			<i>Cacicus holosericeus</i> Yellow-billed Cacique	1	1c,2	2
<i>Chlorornis riefferii</i> Grass-green Tanager	x	1	x	<i>Cacicus (leucoramphus) chrysonotus</i> Mountain Cacique	x	x	1 1 x
<i>Sericossypha albocristata</i> White-capped Tanager	x	x		<i>Carduelis magellanica</i> Hooded Siskin	x		
<i>Chlorospingus ophthalmicus</i> Common Bush Tanager	x			<i>Cyanolyca (viridicyana) viridicyana</i> Collared Jay	x	x	1 x
<i>Chlorospingus parirostris</i>				<i>Cyanocorax yncas</i> Green Jay	x	1,2	
Yellow-whiskered Bush Tanager	x						
<i>Chlorospingus flavigularis</i>							
Yellow-throated Bush Tanager	2						