

Distributional and altitudinal range extensions for birds from Ecuador

EXTENSIONES DE DISTRIBUCIÓN GEOGRÁFICA Y ALTITUDINAL PARA AVES EN ECUADOR

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Abstract

I describe distributional and altitudinal range extensions for 73 bird species from Ecuador. These records are relevant at the Neotropical level for *Phalacrocorax brasilianus*, *Bartramia longicauda*, *Tringa semipalmata*, *Phalacrocorax carunculatus*, *Falco columbarius*, *F. femoralis*, *Pyrocephalus rubinus*, *Tyrannus tyrannus*, *Troglodytes solstitialis*, *Thraupis palmarum*, *Catamenia inornata*, *Zonotrichia capensis*, *Atlappetes pallidinucha*, *Chlorospingus flavigularis* and *Passer domesticus*, and at the Ecuadorian level for *Podiceps occipitalis*, *Nycticorax nycticorax*, *Butorides striata*, *Egretta caerulea*, *Gallinula galeata*, *Calidris fuscicollis*, *C. himantopus*, *Leucophaeus atricilla*, *L. pipixcan*, *Athene cunicularia*, *Malacoptila fulvogularis*, *Falco sparverius*, *F. peregrinus*, *Synallaxis azarae*, *Asthenes wyatti*, *Thraupis bonariensis*, *Buthraupis wetmorei*, *Phrygilus alaudinus* and *Catamenia analis*. Distributional extensions are discussed in terms of possible range expansions (some waterbirds in the highlands), and/or under-investigated areas of Ecuador (Chimborazo, Cotopaxi and Tungurahua Provinces, Llanganates National Park). I conclude with three explanations for the observed altitudinal range extensions.

Keywords: cloud forest, Important Bird Areas (IBA), range expansion, elevation, South America

Resumen

Extensiones de los rangos de distribución y altitudinal son presentadas para 73 especies de aves de Ecuador. Estas contribuciones son de interés a nivel neotropical para *Phalacrocorax brasilianus*, *Bartramia longicauda*, *Tringa semipalmata*, *Phalacrocorax carunculatus*, *Falco columbarius*, *F. femoralis*, *Pyrocephalus rubinus*, *Tyrannus tyrannus*, *Troglodytes solstitialis*, *Thraupis palmarum*, *Catamenia inornata*, *Zonotrichia capensis*, *Atlappetes pallidinucha*, *Chlorospingus flavigularis* y *Passer domesticus*, e ecuatoriano para *Podiceps occipitalis*, *Nycticorax nycticorax*, *Butorides striata*, *Egretta caerulea*, *Gallinula galeata*, *Calidris fuscicollis*, *C. himantopus*, *Leucophaeus atricilla*, *L. pipixcan*, *Athene cunicularia*, *Malacoptila fulvogularis*, *Falco sparverius*, *F. peregrinus*, *Synallaxis azarae*, *Asthenes wyatti*, *Thraupis bonariensis*, *Buthraupis wetmorei*, *Phrygilus alaudinus* y *Catamenia analis*. Las extensiones son interpretadas como posibles expansiones (unas de las aves acuáticas) y/o como indicadoras de áreas poco estudiadas de la sierra ecuatoriana (provincias del Chimborazo, Cotopaxi y Tungurahua, Parque Nacional Llanganates). Concluyo con tres explicaciones por las extensiones de rango altitudinal presentadas.

Palabras clave: Áreas Importantes para la Conservación de las Aves (AICA), bosque nublado, extensión de rango, altura, Suramérica

Introduction

During the past two decades, accumulation of ornithological knowledge has rapidly increased in the Neotropics, including Ecuador (Freile *et al.* 2006). The update on systematics, status, and distribution ranges of bird species in Ecuador by Ridgely & Greenfield (2001) provided a baseline of information that fostered and structured current natural history,

distribution and conservation data collection in the country. Based on distribution ranges presented in this monograph, in Fjeldså & Krabbe (1990), and in subsequent distributional updates, I describe distributional and altitudinal range extensions for 73 species from Ecuador.

Methods

Records were collected from 2003 to 2010 during *c.* 380 visits to 64 Ecuadorian sites (see also Henry 2005, 2008, Henry & Aznar 2009, Cisneros-Heredia *et al.* 2012). Precise geographical coordinates, elevations, Province, and field observation effort per site are provided in the Appendix 1. The province is also indicated in the text after every first mention of a locality. Species names and taxonomy follow Remsen *et al.* (2012). Names of Important Bird Areas (IBA) follow Freile & Santander (2005).

Results and Discussion

Range extensions

Silvery Grebe - *Podiceps occipitalis*. A breeding population was discovered at Laguna de Colta, Chimborazo Province. The first record was a pair in August 2003 (B. Palacios and T. Humpage, *in litt.*), followed by ≥ 3 on 29 June 2004 (one pair in display), 9 on 7 January 2005 (with one chick two thirds of adult size), 2-3 in July-August 2005 (Santander *et al.* 2006), 17 on 15 February 2006 (with M. Avalos, including three immatures and two chicks one third of adult size), 80 on 22 September 2008 (including 7 chicks one half of adult size to fully grown) and 181 on 29 December 2010 (including immatures and adults in display). During the 2008 census, I could count only *c.* 50 % of the area because of reedbed growth, what suggests that the population size had already reached *c.* 150 individuals. Laguna de Colta therefore hosts the second major population for Ecuador, after Laguna La Mica, Napo Province (Muñoz Ron 2001, Santander & Muñoz 2005; Freile & Santander 2005). A small breeding population was also discovered in western Tungurahua province: six pairs, one unpaired adult and one chick (two thirds of adult size) were observed at Laguna Chilingue, in the upper part of Quebrada de Rio Pusuyuyo, on 9 and 15 December 2010, and a pair was at a lake upstream from Represa Mula Corral, on 20 December 2010. These are the first records for Chimborazo and Tungurahua provinces, and for IBA EC059 (Freile & Santander 2005). Although the species is common and abundant in the southern Andes (Fjeldså & Krabbe 1990), it is Vulnerable to extinction in Ecuador (Granizo *et al.* 2002) where it is restricted to a few lakes (Santander *et al.* 2006). For central and southern highlands, the species was known from two localities only: at a lake in the

north-west Morona Santiago Province and in the El Cajas area, Azuay Province (Ridgely & Greenfield 2001, Santander *et al.* 2006). According to breeding phenology, fledging in December-February coincides with records from the rest of the Andes (November-February; Fjeldså & Krabbe 1990). However breeding in August-September would not be common for the species. At Laguna La Mica, breeding has been reported for April-July (Santander *et al.* 2007, F. Sornoza, R. S. Ridgely, and R. Ahlman, *in litt.*).

Neotropic Cormorant - *Phalacrocorax brasilianus*.

This mostly lowland species was recorded at several high altitude lakes: ≥ 8 at Lagunas de Atillo, Chimborazo Province, on 13 January 2005, 22-26 on 13 and 21 February 2006 (all but one were immatures) and 1 immature on 19 August 2008 at Laguna de Yambo, Cotopaxi Province, 2-3 at Laguna de Pisayambo, Pichincha province, on 17 and 19 February 2006, and 1 immature at Laguna de Yanacocha, Napo Province, on 18, 23 and 24 February 2006. These records, in addition to other unpublished data (one juvenile at Laguna de Yambo, July 2004, C. A. Rodríguez Saltos *in litt.*; 1-6 at Laguna La Mica, *c.* 3,900 m, 7-15 November 2004, R. S. Ridgely *et al.* *in litt.*; one at Laguna de Llaviuco, El Cajas National Park, 3,150 m, February-March 2005, B. Tinoco M., *in litt.*; see also Henry 2005) suggest an increase of the species in the Ecuadorian highlands. This has been statistically confirmed for the Laguna de Yahuarcocha (Guevara *et al.* 2011). The increase, with a possible bias toward immature individuals, may suggest a change in the dynamics of the source population(s). Another explanation could be that the fish or macro-invertebrate communities of highland lakes have changed, e.g. through fish introductions or trout production, now offering cormorants an increased food availability than during the 20th century (P. Coopmans, J. Nilsson, *in litt.*).

Black-crowned Night-Heron - *Nycticorax nycticorax*.

A juvenile was observed at Laguna de Yambo on 13 and 21 February 2006. In the Ecuadorian highlands, this species was only known until recently from northern provinces (Ridgely & Greenfield 2001, Henry 2005, Vogt 2007). The present record, in addition to recent records from Chimborazo and Azuay provinces (Ridgely & Greenfield 2001, Cisneros-Heredia 2006, Santander *et al.* 2007), suggest that the species occurs locally all along the Ecuadorian highlands, as in the rest of the Andes (Fjeldså & Krabbe 1990).

Striated Heron - *Butorides striata*. Two individuals were observed at Laguna de Yambo on 13 and 21 February 2006 and 19 August 2008, and four individuals (including two adults) on 21 December 2010. One was observed at Los Elenes, Chimborazo Province, on 18 August 2008, and one at Laguna de Colta on 29 December 2010. Three individuals had already been observed at the Laguna de Yambo in February 1996 (J. F. Freile, *in litt.*), and one at Laguna de Colta in July 2006 (Santander *et al.* 2007). A range extension for the highlands is further supported by records from southern Andean Ecuador: an observation near the Yunguilla Reserve, Azuay Province, on 4-6 December 2001 (J. F. Freile, *in litt.*), and two individuals at Jipiro Park, Loja city, Loja Province (04°00'S 79°12'W) on 26 April 2003 (J. F. Freile) and in August 2007 (D. F. Cisneros-Heredia, *in litt.*). All these records suggest that the species occurs locally all along the Ecuadorian highlands, as in the rest of the Andes (Fjeldså & Krabbe 1990), and not only in northern provinces (Ridgely & Greenfield 2001).

Little Blue Heron - *Egretta caerulea*. An adult was observed at Laguna de Yambo on 21 December 2010. The species is a rare to uncommon visitor to wetlands of the Ecuadorian highlands, mainly in the Imbabura Province (Ridgely & Greenfield 2001). The present record indicates that vagrants also occur at wetlands from central provinces. It is also rare in the rest of the high Andes (Fjeldså & Krabbe 1990).

Pearl Kite - *Gampsonyx swainsonii*. Single birds were observed at Estero Lindo community, between Zapotal and Las Naves, Bolívar Province, on 23 July 2003, and 4 km east of Ventanas, Los Ríos Province, on 3 August 2003. These records are the first for the Bolívar Province, and represent a *c.* 20 km east extension of the distribution limit given in Ridgely & Greenfield (2001).

Common Moorhen - *Gallinula galeata*. The species was recorded on all visits at Laguna de Yambo: 3 adults on 13 February 2006, 4 individuals on 21 February 2006, 2 on 19 August 2008, and 6 adults on 21 December 2010. The species had already been observed there in July 2004 (Santander *et al.* 2007). One adult was also observed at Laguna de Colta on 22 September 2008. In the Ecuadorian highlands, the species was reported from

lakes in northern Imbabura Province, with only few old records from central Ecuador (Ridgely & Greenfield 2001). My records, in addition to recent ones (Loja and Azuay Provinces; respectively Janni 2004 and Cisneros-Heredia 2006), suggest that the species occurs locally all along the Ecuadorian highlands, as in the rest of the Andes (Fjeldså & Krabbe 1990). The Chimborazo record extends the upper altitudinal limit for the species in Ecuador (Table 1).

Willet - *Tringa semipalmata*. On 23 September 2008, two adults/sub-adults of ssp. *inornata* (Y. Aubry, *in litt.*) have been photographed in Chimborazo Province: one at Laguna de Colta and one at the bogs up the Quebrada Puyal, Juan de Velasco (Fig. 1). This last bird landed next to me, exhausted, at 15:30 h, half an hour before an ice storm. These sightings are the second and third records of the species for the Ecuadorian highlands (Brinkhuizen & Rodríguez 2008), and are the highest records for the species (Table 1). The subspecies *inornata*, from Western North America, is the most likely to be recorded accidentally in the Andes since it is the commonest along the Pacific coast of South America (Lowther *et al.* 2001; but see discussion of a 50-km inland record of *T. s. semipalmata* in Brinkhuizen & Rodríguez 2008). Although the species would be a nocturnal migrant (Lowther *et al.* 2001), the Puyal record provides an evidence of diurnal migration.

Peruvian Pygmy-Owl - *Glaucidium peruanum*. One singing individual was observed at the bus station of La Maná on 23 August 2003. The heavily spotted head, scapulars and wings, were typical of the high elevation form (Ridgely & Greenfield 2001). This is the first record for Cotopaxi Province, 35 km east of the distribution limit in Ridgely & Greenfield (2001).

Andean Tit-Spinetail - *Leptasthenura andicola*. One was observed at a patch of elfin forest, next to Laguna El Tambo, Llanganates National Park, Napo Province, on 18 February 2006. Ridgely & Greenfield (2001) did not report the presence of the species for the eastern ridge of the Andes south of Cotopaxi Province. Thus, this record extends the distribution of the species to include the western Napo/eastern Tungurahua Province, as predicted in Krabbe *et al.* (1998).



Figure 1. Adult/sub-adult Western Willet *Tringa semipalmata inornata* at Juan de Velasco, Chimborazo Province, at 4,120 m, on 23 September 2008 (Photo: P.-Y. Henry).

Eastern Kingbird - *Tyrannus tyrannus*. Two records of single migrant birds were obtained for the highlands: one north-east of Yuigan - Los Elenes, Chimborazo Province, on 26 March 2004 (with J.-C. Aznar), and one at La Carolina community, Tungurahua Province, on 19 April 2004 (with J.-C. Aznar). These records are the first for pre-nuptial migration in the Ecuadorian highlands (Ridgely & Greenfield 2001). The species migrates mainly through Amazonian lowlands and subtropics, and is rarely recorded higher than foothills in Ecuador (Ridgely & Greenfield 2001), or higher than subtropics further north (Restall *et al.* 2006). But to reach Middle America the species has to fly over the Andes at some point. This crossing over seems to occur mainly in Colombia, with very few records from western lowlands of Ecuador and Peru (Vogt 2007, Freile 2008). Present records indicate that some individuals could cross the Andes as far south as Ecuador.

Black-crowned Tityra - *Tityra inquisitor*. A male was observed in an orange-tree plantation at 'La Y' community, c. 5 km east-north-east of San Luis de Pambil, on 7 October 2003. This record is the first for Bolívar Province, 30 km east of the known distribution limit, and is outside of the species favoured habitat since it is not given to range into the foothills (Ridgely & Greenfield 2001).

Palm Tanager - *Thraupis palmarum*. One was recorded at Parque Maldonado, Riobamba, Chimborazo Province, on 28 May and 6 July 2004. It was with two adult Blue-gray Tanagers *T. episcopus*. This record is the highest for the species (Table 1), and the first for the Ecuadorian highlands (Ridgely & Greenfield 2001). This bird could have escaped from a cage, since it was at a major urban centre. However a wild origin is also possible since the species naturally dwells near urban settlements (Ridgely & Tudor 1994), and this bird accompanied another tanager of same tropical origin, which naturally occurs at inter-Andean valleys in the studied region (P.-Y. Henry & J.-C. Aznar, unpub.).

Rufous-collared Sparrow - *Zonotrichia capensis*. The species was located at several eastern lowland and foothill localities: one adult at the urban park of Misahuallí, Napo Province, on 20 July 2004, three singers in the main street of Loreto, Orellana Province, on 21 and 30 August 2008, two singers at the market place of Tena, Napo Province, on 21 and 30 August 2008, ≥ 2 at Cuevas de Jumandi tourist resort, north of Archidona, Napo Province, on 18 July 2004, and one adult at km 15 on road going from Puyo to Macas, Pastaza Province on 25 July 2004. These low altitude records suggest a recent expansion of the species into the foothills and lowlands of Pastaza, Napo and Orellana Provinces (Ridgely & Greenfield 2001; Buitrón-Jurado

2011). They also extend the lower altitudinal limit for the species in Ecuador to *c.* 400 m (Table 1d).

White-browed Brush-Finch - *Arremon torquatus*. One individual was observed, singing, 1-5 km west of San Juan de Velasco, along the Panamerican road, on 30 March 2004. Its almost completely black head with indistinct grey eye- and coronal-stripes suggest spp. *nigrifrons*. This is the first record for the western slope of the Andes in Chimborazo Province (Ridgely & Greenfield 2001, see Oppel *et al.* 2004 for Azuay Province).

Pale-naped Brush-Finch - *Atlapetes pallidinucha*. The species was observed in western Tungurahua province. Eight individuals were recorded and photographed in humid montane shrubs at three different sites in the Quebrada Quichibí on 15 and 20 August 2008, and two individuals were observed at two other sites in the valley of Vía Miraflores, on 9 and 15 December 2010 (site 62 in Appendix). These localities are on the eastern slope of the western chain of the Ecuadorian Andes. The species was considered to occur only on the eastern chain (Fjeldså & Krabbe 1990, Ridgely & Greenfield 2001). The present records show that, in Ecuador, the species locally occurs in the western chain above the central inter-Andean valley. It had actually been observed *c.* 13 km south-south-west of Quebrada Quichibí by Krabbe *et al.* (1998).

House Sparrow - *Passer domesticus*. The species was searched for at 9 eastern lowland towns: Loreto and San Francisco de Orellana for Orellana Province, Archidona, Baeza, Misahuallí and Tena for Napo Province, Puyo for Pastaza Province, and Sucúa and Macas for Morona-Santiago Province. It was found at Tena on 22 July 2004 (but not on 21 and 30 August 2008) and Macas on 24 July 2004, with ≥ 2 individuals recorded at market places

in both places. Previous records from eastern Andean foothills in Ecuador were limited to southern cities: Macas, and Zumba and Zamora from Zamora Chinchipe Province (Ridgely & Greenfield 2001). The present record suggests continuing northward expansion of this introduced species. The expansion proceeds markedly slower than in the western lowlands where the species had reached Esmeraldas Province from north-western Ecuador as early as 1977 (Ortiz Crespo 1977). This slower eastern expansion may be due to the late crossing of the Andes by the species (the oldest record available is from Zamora in 1989, Marín A. *et al.* 1992) and/or the lower/latter deforestation of eastern lowlands that likely limits dispersal between human settlements.

Records of rare or localized species

Black-and-chestnut Eagle - *Spizaetus isidori*. One adult was observed in flight, then sitting on a tree, in a forest clearing at Machay, Tungurahua Province on 20 February 2006. Another adult was observed twice soaring above the main tunnel on road between Guamote and Macas, Sangay National Park, Morona-Santiago Province, on 14 January 2005. These records add the species to the list of species Vulnerable to extinction for IBAs EC057 and EC061 (Freile & Santander 2005, BirdLife International 2012).

American Golden-Plover - *Pluvialis dominica*. Two first-year birds were observed at Laguna de Colta on 23 September 2008. This is the first record of this migrant species for IBA EC059 and for the province (Ridgely & Greenfield 2001). The species can turn up virtually everywhere in the Andes during migration, but it is more common during pre-nuptial migration when the main migration flyway follows the Andes (Fjeldså & Krabbe 1990).



Figure 2. Two White-rumped Sandpipers *Calidris fuscicollis* at Laguna de Colta, Chimborazo Province, on 23 September 2008 (Photo: P.-Y. Henry).

Stilt Sandpiper - *Calidris himantopus*. Four individuals were observed foraging at a shrimp pond, next to Manglares-Churute Ecological Reserve, Guayas Province, on 21 September 2003 (IBA EC029), and 2-11 at the Laguna de Colta on 22-25 September 2008 (photographed). In recent years, there have been few records outside from western Guayas Province (Ridgely & Greenfield 2001). The present records add a new locality (and IBA) where this migrating species occurs in western Ecuador. They also provide a contemporaneous record for the Laguna de Colta, one of the three wetlands of the Ecuadorian Andes where the species has been reported to stop-over during post-nuptial migration (Ridgely & Greenfield 2001, Freile 2004).

Laughing Gull - *Leucophaeus atricilla*. Three first-winter birds were observed at Laguna de Colta on 15 February 2006, four on 28 February 2006 (photographed), and two at Laguna de Yambo on 13 and 21 February 2006 (photographed). There are only two previously published records for the Ecuadorian highlands (Ridgely & Greenfield 2001, Santander *et al.* 2011), including one from Laguna de Colta.

Franklin's Gull - *Leucophaeus pipixcan*. One first-winter individual was observed at Laguna de Colta on 15 and 28 February 2006 (photographed) and on 29

December 2010. Only three previous records were known for the Ecuadorian highlands (Ridgely & Greenfield 2001), including one from Laguna de Colta.

Black-streaked Puffbird - *Malacoptila fulvogularis*. One individual, most likely attributable to this species, was observed upstream from Machay, between the 5th and 6th waterfalls, Tungurahua Province, on 2 March 2006. The bird perched on a twig and swallowed an invertebrate prey. It stood silent, motionless, for *c.* 3 min, with a hunched posture, at 3-4 m above ground. Habitat was young, open undergrowth of secondary subtropical forest, surrounded by old-growth forest. It was identified by the distinctive white streaking pattern on dark-brown crown and nape, stout dark bill, relatively large eyes, dark-brown back, posture, size, and behaviour (Ridgely & Greenfield 2001). However, the bird was observed against light source and from behind, and the distinctive breast, lores and moustaches, and eye colour could not be observed. This is the second known site of occurrence for central and northern Ecuador, in addition to Napo Province (Ridgely & Greenfield 2001).

Merlin - *Falco columbarius*. New records from three highland localities were collected: one at Unalaga Queyedo, Cotopaxi Province, on 11 March 2004 (with J.-C. Aznar), a male at Tumbaco, Pichincha Province in

January 2006 (00°17'S 78°27'W; L. Navarrete, *in litt.*) and ≥1 probable first-winter male at elfin forest patches in the Llanganates National Park, at the northern slope of Cerro Aucacocha, Tungurahua Province, on 18 February 2006 and at Laguna de Yanacocha, Napo Province, on 23 February 2006. The Llanganates records are the highest for the species (Table 1).

Peregrine Falcon - *Falco peregrinus*. Records of single individuals were collected from Chimborazo Province: adults, including one capturing a Sandpiper *Calidris sp.*, at Laguna de Colta on 26 February 2003, 13 March 2004 and 23 September 2008, one adult capturing an Eared Dove *Zenaida auriculata* at Nitiluisa community on 1 April 2004 (with X. Guzman Paucar and J.-C. Aznar), one that failed to capture an Eared Dove at Los Ángeles community on 11 June 2004, and one from Laguna de Yambo, Cotopaxi Province, on 21 February 2006. All Chimborazo records were at *c.* 3,300 m, i.e. above the altitudinal limit for Ecuador (Table 1). D. F. Cisneros-Heredia (*in litt.*) actually suggest that the species is regular up to 3,800 m (e.g., recorded at Mojanda, Imbabura Province, at the Pichincha Volcano and Yanacocha, Pichincha Province, at the Cotopaxi Volcano and the Laguna de Limpiopungo, Cotopaxi Province). The species might breed at Laguna de Yambo. The bird was first detected by territorial calls. Then, an adult was located in the 50-m high cliff overhanging the lake on its western side, in a horizontal crevice hole. Faeces accumulation indicated a regular roost. The site provides year-round, sustained waterbird prey availability (Santander *et al.* 2007), protection against human disturbances and against dominant winds. It may thus be suitable for nesting. Nonetheless, in February, boreal individuals are still at their South-American wintering grounds and can be territorial (Kéry 2002). Future visits to search for breeding activity are necessary. One individual had already been recorded at that same cliff in July 2005 (J. F. Freile, *in litt.*). And the first historical breeding record of Peregrine Falcons in Ecuador was labelled 'Yanayacu', which locality was attributed to the upper reaches of Río Pastaza (White 1989). Actually, the Río Pastaza canyon lies 1 km east of Laguna de Yambo, and a 'Río Yanayacu' exists 3 km north of Laguna de Yambo. The Yambo site may thus be very close from this historical breeding site. If breeding was to be confirmed, it would be the second known breeding site for Ecuador (Ridgely & Greenfield 2001). An established, territorial pair has been recorded since 2002 at a third site, Cerro Chiriculapo, Catacocha, Loja Province (1,800 m, 04°03'17"S 79°39'04"W; F. Rodas

and B. Tinoco, *in litt.*), but actual breeding has not been established. In the rest of the Northern and Central Andes, breeding recently proved to be more widespread than formerly described (Kéry 2002).

Subtropical Doradito - *Pseudocolopteryx acutipennis*. One individual was observed at Laguna de Colta on 23 September 2008, and 12 on 29 December 2010. This rare species, considered to be threatened of extinction in Ecuador (Freile & Rodas 2008), inhabits only a few wetlands in the Ecuadorian Andes. The present record indicates that it still occurs at IBA EC059 (Ridgely & Greenfield 2001).

Shrike-like Cotinga - *Laniisoma elegans buckleyii*. A male was observed at Ángel Rubí community, east of Macas, in the western foothills of Cordillera de Kutucú, Morona-Santiago Province, on 24 July 2004 (IBA EC082). It was alone, sitting on a branch, at mid-height above a stream, in extensively cultivated terrains of hilly foothills. The species was first recorded at Cordillera de Kutucú in August 2002, when Krabbe & Nilsson (2003) tape-recorded and collected two specimens from the western part of the cordillera (Museo Ecuatoriano de Ciencias Naturales, specimens MECN 7680 and 7681, M. Vargas, *in litt.*). The present species account is the first published update reporting the species from Cordillera de Kutucú, which is the 11th known locality for Ecuador (Ridgely & Greenfield 2001).

Masked Mountain-Tanager - *Buthraupis wetmorei*. Five individuals were recorded in mixed species bird flocks at Laguna de Yanacocha, Llanganates National Park, on 24 February 2006 (IBA EC056): three individuals in a flock including temperate and humid mountain forest bird species, at 3,350 m, in Quebrada Yanacocha, and two individuals in a flock of elfin forest bird species at 3,440 m, on the south-eastern slope above the lake (with. F. Paucar Muñoz, see also Henry 2008). This localized, elfin forest species (Ridgely & Greenfield 2001), globally Vulnerable to extinction, had already been recorded at the Llanganates National Park (Krabbe *et al.* 1997, 1998, Freile & Santander 2005), but as little is known on its distribution and natural history that it is worth publishing new records.

White-winged Brush-Finch - *Atlapetes leucopterus*. A group of five individuals was observed in gardens surrounded by shrubby, bamboo-dominated, temperate disturbed forest, on the side of the dirt road going from Guaranda to Echeandía, Bolívar Province, on 15 January

2005. Whereas the species is fairly common in the Ecuadorian inter-Andean valleys, it is known from few localities on the west slope of the Andes (Fjeldså & Krabbe 1990, six sites in Ridgely & Greenfield 2001). This record provides a new locality in the west slope, and the second locality for Bolívar Province (Bonaccorso 2004).

High altitudinal records

Overall, extensions of the upper altitudinal limit were obtained for 45 species (Table 1). According to my knowledge, present records are among the highest known for 11 species: Upland Sandpiper *Bartramia longicauda*, Willet *Tringa semipalmata*, Short-eared Owl *Asio flammeus*, Carunculated Caracara *Phalacrocorax carunculatus*, Merlin *Falco columbarius*, Aplomado Falcon *F. femoralis*, Vermilion Flycatcher *Pyrocephalus rubinus*, Mountain Wren *Troglodytes solstitialis*, Palm Tanager *Thraupis palmarum*, Plain-colored Seedeater *Catamenia inornata* and Yellow-throated Bush-Tanager *Chlorospingus flavigularis*. And records for 29 species (67%) were observed above the usual altitudinal limit for Ecuador (Ridgely & Greenfield 2001), although these species occur at higher elevation elsewhere in the Andes.

There are two areas of the central Andes where I rapidly obtained a large set of high altitudinal records. It concerned 8 (13%) out of the 63 species observed in four days in the upper part of the Llanganates National Park, between the Lagunas de Pisayambo and Yanacocha, Tungurahua/Napo Provinces (Table 1a), and 16 (38%) out of the 42 species observed in the dry, grassy to barren, paramo covering the western slopes of the Chimborazo Volcano in 14 visits (Table 1b). When I pool all high altitudinal records that I obtained above 3,000 m between 2002 and 2008 for the central Andes (Table 2c, Henry 2005, Henry & Aznar 2009, Cisneros-Heredia *et al.* 2012), 34% of the 145 observed bird species were above their usual altitudinal limits for Ecuador (Ridgely & Greenfield 2001).

The records of Giant Conebill *Oreomanes fraseri* (Near Threatened of extinction; BirdLife International 2012) and Blue-mantled Thornbill *Chalcostigma stanleyi* add a new locality for the western chain of the Ecuadorian Andes (Ridgely & Greenfield 2001) where these specialists of remnant patches of *Polylepis* trees still occur (Fig. 3).



Figure 3. Remnant patch of *Polylepis* trees of Cerro Atiu, south-western slope of Chimborazo Volcano, Chimborazo Province, on 25 September 2008 (Photo: P.-Y. Henry).

Low altitudinal records

Six species have been recorded close or lower than their lowest altitudinal limits for Ecuador (Table 1e). All are known to occur at lower altitudes in other parts of the Andes (Table 1c). The collection of four low altitude records in just three days at La Esperanza – Tingo, Bolívar Province, suggests that this valley hosts relatively low elevation populations for some subtropical-temperate bird species, and/or that the west slope of central Ecuadorian Andes is still under-investigated (Bonaccorso 2004, Henry 2005).

Concluding remarks

The recent increase of waterbird records outside their reported ranges in the highlands (Henry 2005, Buitrón & Freile 2006, Cisneros-Heredia 2006, Santander *et al.* 2006, 2007, 2011, Buitrón-Jurado & de Vries 2008, Guevara *et al.* 2011) could suggest a current colonization of the Andean wetlands of central and southern Ecuador. Upward range expansion is confirmed for the Neotropical Cormorant (Guevara *et al.* 2011). The trends of the other waterbirds need to be assessed with appropriate analyses of systematic waterbird census data (Santander *et al.* 2006) to account for a potential temporal increase of the birdwatching effort. The large number of records higher than known altitudinal limits from Ecuador that I collected seems surprising given the relatively good ornithological coverage for the country (Ridgely & Greenfield 2001; but see Freile *et al.* 2006). The 44 highest records (Table 1, excluding the accidental

Willet) were 388 ± 248 m (s.d.; min.-max. range: 16 – 930) higher than altitudinal limits for Ecuador in Ridgely & Greenfield (2001), but they were close to the limits known for the rest of the Andes (-304 ± 458 m [-1,252 – 1,000]; Fjeldså & Krabbe 1990). For this same set of species, the upper altitudinal limits were -689 ± 475 m (-300 – 1,800) lower in Ridgely & Greenfield (2001) than in Fjeldså & Krabbe (1990; paired samples t-test, $t_{40} = -9.3$, $P < 0.001$). Three hypotheses can explain this systematic difference in upper altitudinal limit between Ecuador and the rest of the Andes. (i) Simply, rules for delimiting altitudinal ranges may have differed between the two monographs. I have not been able to deduce such differences from the corresponding methodological sections. (ii) Ridgely & Greenfield (2001) may have under-investigated highlands (>3,000-m) relative to Fjeldså & Krabbe (1990). This could have yielded underestimation of the upper altitudinal distribution tail for highland species. Under-investigation of the Ecuadorian highlands has also been suggested by Vogt (2006), and would be congruent with the high rate (34%) of species that I found above the known altitudinal limit for Ecuador. (iii) The difference among monographs could have a biogeographical basis. Considering the negative compensation of the effect of altitude by latitude on ecosystem delimitations (Troll 1970), Neotropical species are expected to reach their highest altitudes the closest from the equator, i.e. in Ecuador. However, 77% of the species considered here reach their highest altitude elsewhere than in Ecuador. Fjeldså (1985) reported a similar trend for waterbirds. This unexpected excess of high altitude records far from the equator could be explained by systematic geo-climatic differences along the Andes, e.g. the higher area of high

altitude tablelands in Peru-Bolivia than in Ecuador, or the distortion of the altitude-latitude relationship around the equator because of relatively high precipitations at high altitudes in the equatorial zone compared to the tropics (Troll 1970). A systematic, comparative analysis of these two monographs could tell us what are the global determinants of these variations of the upper altitudinal limits throughout the Andes. Eventually, if some of my records report true upward species expansions, they may be first signs of climate warming (Parmesan 2006). The impact of global warming is expected to be maximal in the Andean highlands (Bradley *et al.* 2006, Williams *et al.* 2007), particularly for restricted range species (Ohlemuller *et al.* 2008). We need to assemble databases of standardized altitudinal records for the Neotropics if we want to properly test for temporal and spatial changes in upper altitudinal limits of birds in the Andes.

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